



**Elisabetta Baracchini**  
**Francesco Viola**  
**Gran Sasso Science Institute**

**GSSI Marie Curie**  
**Individual Actions Day**

**A section by section overview on how to  
write a successful proposal**



# **MSCA Individual Fellowships: criteria & evaluation process**

# IF: award criteria

The award criteria mirror the proposal structure: we will get back to this in proposal writing

Excellence	Impact	Quality and efficiency of the implementation
Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects	Enhancing the potential and future career prospects of the researcher	Coherence and effectiveness of the work plan
Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host	Quality of the proposed measures to exploit and disseminate the project results	Appropriateness of the allocation of tasks and resources
Quality of the supervision and of the integration in the team/institution	Quality of the proposed measures to communicate the project activities to different target audiences	Appropriateness of the management structure and procedures, including risk management
Capacity of the researcher to reach or re-enforce a position of professional maturity/independence		Appropriateness of the institutional environment (infrastructure)
50%	30%	20%
Weighting		
1	2	3
Priority in case of <i>ex aequo</i>		

## 1. EXCELLENCE

*The following aspects will be considered when assigning an overall score for this criterion:*

- Quality and credibility of the research/innovation action** (level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects)
- Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host**
- Quality of the supervision and of the integration in the team/institution**
- Capacity of the researcher to reach or re-enforce a position of professional maturity/independence**

- ◆ The MC program consists in **Training through Mobility**
- ◆ The training program is thus fundamental
- ◆ Explain as the fellowship will enhance the future career prospects of the researcher

**From Paolo Giacomelli slides**

## 2. IMPACT

*The following aspects will be considered when assigning an overall score for this criterion:*

- Enhancing the potential and future career prospects of the researcher
- Quality of the proposed measures to exploit and disseminate the action results
- Quality of the proposed measures to communicate the action activities to different target audiences

- ◆ The 2nd and 3rd criteria often result unclear
- ◆ 2nd one: dissemination of the results of the action within the scientific community
- ◆ 3rd one: dissemination of the results to the public at large

## 3. IMPLEMENTATION

*The following aspects will be considered when assigning an overall score for this criterion:*

- Coherence and effectiveness of the work plan
- Appropriateness of the allocation of tasks and resources
- Appropriateness of the management structures and procedures, including risk management
- Appropriateness of the institutional environment (infrastructure)

- ◆ Importance of a good working plan
- ◆ Describe the management plan (3rd point) along with the risk management plan
- ◆ 4th point: motivate as the chosen beneficiary is the most suited to your project. Furthermore, show that the beneficiary is interested in the project.

**From Paolo Giacomelli slides**

# Criteria scores

From Alessia  
D'Orazio slides

- 0 The proposal **fails to address the criterion** or cannot be assessed due to missing or incomplete information.
- 1 **Poor.** The criterion is inadequately addressed, or there are serious inherent weaknesses.
- 2 **Fair.** The proposal broadly addresses the criterion, but there are significant weaknesses.
- 3 **Good.** The proposal addresses the criterion well, but a number of shortcomings are present.
- 4 **Very Good.** The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5 **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

- ✦ Evaluator give a **score of between 0 and 5 to each criterion** based on his/her comments
  - ✦ Usually marks in step of 0.1
  - ✦ The whole range of scores should be used
  - ✦ Scores must pass thresholds if a proposal is to be considered for funding
  - ✦ **No individual threshold**
- ✦ **Total score calculated weighting singles scores**
  - ✦ **Overall threshold** for entering the ranking list is 70/100

**this is only the threshold, you need much more (typically >90) to win it**

# Evaluation panel & process

**From Alessia D'Orazio slides**

- ♦ Standard European and Global Fellowship - single disciplinary ranking
  - Chemistry (CHE)
  - Life Sciences (LIF)
  - Economic Sciences (ECO)
  - Mathematics (MAT)
  - Environment and Geosciences (ENV)
  - Physics (PHY)
  - Information Science and Engineering (ENG)
  - Social Sciences and Humanities (SOC)
- ♦ Distribution of awards across Panels is proportional to number of eligible proposals
- ♦ RI, CAR, SE - multidisciplinary ranking
- ♦ The experts are chosen from a public data base from what the EC has ensure having:
  - ♦ A high level of expertise on (some of) the matters related to the topic to be evaluated → Commission staff allocates proposals to individual experts taking account of their fields of core expertise and avoiding conflicts of interest.



- ♦ Short reports summarising the evaluation results
- ♦ Includes scores and supporting comments
- ♦ The Consensus Report is an internal document
- ♦ The ESR is sent to the applicants
- ♦ **30 days to file a complaint**

In case of positive evaluation, max 3 months for the grant agreement preparation  
(Max 8 months from Call deadline to the GA Signature)  
Note that fellowship's earliest start date can be postponed up to 12 months (with PO and HI agreement)

# IF: scores statistics

MSCA-IF-2017 : Cumulative percentage of proposals above threshold, with a given score or higher (funding range marked in green)

Number of eligible proposals	322 proposals	533 proposals	204 proposals	1012 proposals	178 proposals	850 proposals	883 proposals	1701 proposals	167 proposals	763 proposals	1511 proposals	71 proposals	21 proposals	99 proposals	124 proposals	213 proposals	8 proposals	65 proposals	232 proposals
Score equal to or above	CAR	RI	SE	ST-CHE	ST-ECO	ST-ENG	ST-ENV	ST-LIF	ST-MAT	ST-PHY	ST-SOC	GF-CHE	GF-ECO	GF-ENG	GF-ENV	GF-LIF	GF-MAT	GF-PHY	GF-SOC
100	0.00%	0.38%	0.00%	0.00%	0.56%	0.12%	0.00%	0.00%	0.60%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.43%
99	0.31%	0.56%	0.00%	0.00%	0.56%	0.47%	0.45%	0.35%	0.60%	0.00%	0.46%	0.00%	0.00%	1.01%	0.81%	0.00%	0.00%	0.00%	0.43%
98	0.62%	0.94%	0.00%	0.20%	0.56%	1.53%	0.57%	1.06%	0.60%	0.13%	0.99%	0.00%	0.00%	2.02%	3.23%	0.00%	0.00%	0.00%	1.72%
97	1.86%	2.06%	0.49%	1.09%	0.56%	2.94%	1.02%	2.29%	1.20%	1.05%	2.51%	0.00%	0.00%	4.04%	4.03%	0.94%	0.00%	0.00%	4.74%
96	2.80%	4.32%	0.49%	2.47%	1.12%	4.59%	3.51%	4.59%	2.99%	2.10%	4.17%	4.23%	0.00%	7.07%	4.84%	2.82%	0.00%	0.00%	6.47%
95	5.28%	8.44%	1.47%	4.35%	1.12%	6.59%	5.89%	8.29%	5.39%	2.62%	5.43%	7.04%	0.00%	9.09%	5.65%	4.23%	0.00%	3.08%	10.78%
94	6.83%	12.20%	3.43%	6.92%	3.93%	8.94%	9.51%	11.58%	7.78%	4.06%	7.61%	11.27%	4.76%	11.11%	9.68%	6.57%	0.00%	4.62%	12.93%
93	9.63%	16.70%	5.88%	9.49%	6.18%	11.41%	12.34%	15.29%	9.58%	6.42%	9.86%	16.90%	4.76%	17.17%	15.32%	10.33%	12.50%	6.15%	15.09%
92	12.42%	20.26%	8.82%	12.75%	7.30%	13.06%	15.63%	18.17%	13.17%	9.70%	11.52%	21.13%	4.76%	22.22%	17.74%	14.08%	25.00%	12.31%	17.24%
91	15.22%	25.89%	9.80%	16.30%	9.55%	16.00%	19.25%	21.34%	16.17%	12.19%	14.56%	22.54%	4.76%	25.25%	22.58%	17.84%	25.00%	20.00%	19.83%
90	17.39%	29.64%	10.78%	19.07%	12.36%	18.47%	22.54%	24.93%	18.56%	16.12%	17.47%	28.17%	4.76%	32.32%	26.61%	21.60%	25.00%	23.08%	21.98%
89	18.32%	33.96%	12.75%	22.83%	14.61%	21.76%	25.59%	28.45%	22.16%	19.66%	19.66%	29.58%	4.76%	36.36%	29.84%	23.94%	25.00%	26.15%	24.57%
88	21.12%	37.90%	17.65%	27.17%	18.54%	24.94%	28.65%	32.16%	23.95%	23.98%	22.63%	32.39%	19.05%	40.40%	34.68%	27.23%	25.00%	29.23%	27.16%
87	23.60%	40.71%	20.59%	31.03%	20.22%	27.06%	32.50%	36.16%	26.95%	27.39%	25.08%	40.85%	38.10%	42.42%	41.94%	30.52%	25.00%	35.38%	30.60%
86	27.02%	43.15%	23.53%	35.18%	21.35%	30.59%	36.35%	40.21%	33.53%	33.16%	28.33%	43.66%	38.10%	43.43%	43.55%	34.27%	25.00%	38.46%	34.48%
85	30.12%	47.09%	25.98%	38.93%	23.60%	33.41%	40.43%	44.39%	39.52%	36.83%	30.64%	52.11%	52.38%	46.46%	47.58%	38.03%	25.00%	41.54%	35.34%
84	31.06%	49.16%	27.94%	42.09%	27.53%	37.41%	45.07%	47.68%	41.92%	41.42%	33.42%	52.11%	52.38%	50.51%	53.23%	39.91%	25.00%	52.31%	37.93%
83	34.16%	54.41%	29.90%	46.44%	28.65%	41.18%	49.26%	51.97%	45.51%	45.74%	36.47%	56.34%	61.90%	52.53%	58.87%	42.72%	25.00%	55.38%	39.66%
82	36.02%	55.72%	34.80%	51.09%	30.90%	43.65%	51.53%	56.32%	50.30%	49.41%	39.51%	60.56%	61.90%	56.57%	62.90%	49.30%	50.00%	58.46%	43.10%
81	39.13%	58.16%	36.27%	55.34%	32.02%	47.65%	54.25%	60.14%	52.69%	53.47%	43.15%	61.97%	66.67%	56.57%	65.32%	54.46%	62.50%	61.54%	45.69%
80	43.48%	61.16%	39.71%	60.08%	36.52%	50.12%	57.76%	63.67%	55.09%	58.72%	46.19%	61.97%	66.67%	58.59%	67.74%	58.22%	62.50%	67.69%	49.57%
79	45.96%	64.17%	43.14%	63.83%	40.45%	53.41%	60.02%	66.96%	57.49%	62.65%	48.31%	66.20%	66.67%	60.61%	70.97%	61.03%	75.00%	70.77%	53.02%
78	48.14%	67.54%	45.59%	67.19%	43.26%	56.59%	62.17%	70.14%	60.48%	66.71%	51.56%	67.61%	66.67%	61.62%	71.77%	64.32%	75.00%	75.38%	55.17%
77	51.55%	70.36%	47.55%	68.87%	45.51%	59.53%	64.44%	72.37%	62.87%	69.99%	54.00%	67.61%	71.43%	64.65%	74.19%	68.54%	75.00%	75.38%	57.76%
76	54.04%	73.73%	49.02%	70.85%	47.19%	61.41%	67.27%	74.60%	66.47%	72.35%	57.11%	70.42%	71.43%	65.66%	79.03%	72.30%	75.00%	76.92%	61.21%
75	56.52%	75.80%	51.47%	72.63%	50.00%	64.35%	69.08%	76.19%	68.26%	76.28%	59.30%	77.46%	71.43%	66.67%	79.84%	75.59%	75.00%	78.46%	65.09%
74	57.76%	77.49%	53.43%	74.70%	52.81%	66.71%	71.12%	78.07%	70.06%	78.24%	61.28%	78.87%	71.43%	67.68%	80.65%	79.34%	75.00%	80.00%	66.81%
73	59.63%	79.36%	56.37%	76.78%	53.93%	68.71%	73.16%	80.25%	70.06%	79.69%	64.39%	80.28%	71.43%	70.71%	82.26%	80.28%	75.00%	80.00%	69.40%
72	61.18%	80.68%	57.84%	78.36%	55.06%	69.65%	74.86%	82.54%	72.46%	82.18%	66.91%	81.69%	71.43%	71.72%	82.26%	82.16%	87.50%	80.00%	73.71%
71	63.98%	81.61%	59.31%	80.34%	58.43%	71.41%	77.01%	84.60%	73.05%	83.09%	68.83%	81.69%	71.43%	76.77%	82.26%	84.04%	87.50%	83.08%	74.57%
70	64.91%	82.93%	61.76%	82.61%	59.55%	73.53%	79.50%	86.48%	78.44%	85.71%	71.61%	84.51%	76.19%	79.80%	83.87%	85.92%	87.50%	84.62%	78.02%

Percentage of proposals below threshold (<70)	35.09%	17.07%	38.24%	17.39%	40.45%	26.47%	20.50%	13.52%	21.56%	14.29%	28.39%	15.49%	23.81%	20.20%	16.13%	14.08%	12.50%	15.38%	21.98%
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How to interpret this table

The percentage of proposals above the overall threshold and with a given score or higher is shown per ranking list. Green shows the funding range. Proposals below the overall threshold are shown separately and are not part of the cumulative total.

For example:

- in the CAR ranking, 5.28% of all proposals submitted in the ranking list ( total 322) scored 95 or higher. The funding cut off is between 91 and 92.
- in the ST-PHY ranking, 23.98% of all proposals submitted in the ranking list (total 763) scored 88 or higher. The funding cut off is at 90.
- in the GF-SOC ranking, 21.98 % of the proposals scored less than 70, meaning that 78.02% score more than 70.

# IF: scores statistics

ENG: 91 MAT: 91 PHY: 90

MSCA-IF-2017 : Cumulative percentage of proposals above threshold, with a given score or higher (funding range marked in green)																			
Number of eligible proposals	322 proposals	533 proposals	204 proposals	1012 proposals	178 proposals	850 proposals	883 proposals	1701 proposals	167 proposals	763 proposals	1111 proposals	71 proposals	21 proposals	99 proposals	124 proposals	213 proposals	8 proposals	65 proposals	232 proposals
Score equal to or above	CAR	RI	SE	ST-CHE	ST-ECO	ST-ENG	ST-ENV	ST-LIF	ST-MAT	ST-PHY	ST-SOC	GF-CHE	GF-ECO	GF-ENG	GF-ENV	GF-LIF	GF-MAT	GF-PHY	GF-SOC
100	0.00%	0.38%	0.00%	0.00%	0.56%	0.12%	0.00%	0.00%	0.60%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.43%
99	0.31%	0.56%	0.00%	0.00%	0.56%	0.47%	0.45%	0.35%	0.60%	0.00%	0.46%	0.00%	0.00%	1.01%	0.81%	0.00%	0.00%	0.00%	0.43%
98	0.62%	0.94%	0.00%	0.20%	0.56%	1.53%	0.57%	1.06%	0.60%	0.13%	0.99%	0.00%	0.00%	2.02%	3.23%	0.00%	0.00%	0.00%	1.72%
97	1.86%	2.06%	0.49%	1.09%	0.56%	2.94%	1.02%	2.29%	1.20%	1.05%	2.51%	0.00%	0.00%	4.04%	4.03%	0.94%	0.00%	0.00%	4.74%
96	2.80%	4.32%	0.49%	2.47%	1.12%	4.59%	3.51%	4.59%	2.99%	2.10%	4.17%	4.23%	0.00%	7.07%	4.84%	2.82%	0.00%	0.00%	6.47%
95	5.28%	8.44%	1.47%	4.35%	1.12%	6.59%	5.89%	8.29%	5.35%	2.62%	5.43%	7.04%	0.00%	9.09%	5.65%	4.23%	0.00%	3.08%	10.78%
94	6.83%	12.20%	3.43%	6.92%	3.93%	8.94%	9.51%	11.58%	7.7%	4.06%	7.61%	11.27%	4.76%	11.11%	9.68%	6.57%	0.00%	4.62%	12.93%
93	9.63%	16.70%	5.88%	9.49%	5.88%	11.4%	12.34%	15.29%	9.53%	6.42%	9.86%	16.90%	4.76%	17.17%	15.32%	10.33%	12.50%	6.15%	15.09%
92	12.42%	20.26%	8.82%	12.75%	7.30%	13.1%	15.63%	18.17%	11.7%	9.70%	11.52%	21.13%	4.76%	22.22%	17.74%	14.08%	25.00%	12.31%	17.24%
91	15.22%	25.89%	9.80%	16.30%	9.55%	16.00%	19.25%	21.34%	16.17%	12.19%	14.56%	22.54%	4.76%	25.25%	22.58%	17.84%	25.00%	20.00%	19.83%
90	17.39%	29.64%	10.78%	19.07%	12.36%	18.47%	22.54%	24.93%	18.56%	16.12%	17.47%	28.17%	4.76%	32.32%	32.32%	26.61%	21.60%	23.08%	21.98%
89	18.32%	33.96%	12.75%	22.83%	14.61%	21.76%	25.59%	28.45%	22.16%	19.66%	19.66%	29.58%	4.76%	36.36%	29.84%	23.94%	25.00%	26.15%	24.57%
88	21.12%	37.90%	17.65%	27.17%	18.54%	24.94%	28.65%	32.16%	23.95%	23.98%	22.63%	32.39%	19.05%	40.40%	34.68%	27.23%	25.00%	29.23%	27.16%
87	23.60%	40.71%	20.59%	31.03%	20.22%	27.06%	32.50%	36.16%	26.95%	27.39%	25.08%	40.85%	38.10%	42.42%	41.94%	30.52%	25.00%	35.38%	30.60%
86	27.02%	43.15%	23.53%	35.18%	21.35%	30.59%	36.35%	40.21%	33.53%	33.16%	28.33%	43.66%	38.10%	43.43%	43.55%	34.27%	25.00%	38.46%	34.48%
85	30.12%	47.09%	25.98%	38.93%	23.60%	33.41%	40.43%	44.39%	39.52%	36.83%	30.64%	52.11%	52.38%	46.46%	47.58%	38.03%	25.00%	41.54%	35.34%
84	31.06%	49.16%	27.94%	42.09%	27.53%	37.41%	45.07%	47.68%	41.92%	41.42%	33.42%	52.11%	52.38%	50.51%	53.23%	39.91%	25.00%	52.31%	37.93%
83	34.16%	54.41%	29.90%	46.44%	28.65%	41.18%	49.26%	51.97%	45.51%	45.74%	36.47%	56.34%	61.90%	52.53%	58.87%	42.72%	25.00%	55.38%	39.66%
82	36.02%	55.72%	34.80%	51.09%	30.90%	43.65%	51.53%	56.32%	50.30%	49.41%	39.51%	60.56%	61.90%	56.57%	62.90%	49.30%	50.00%	58.46%	43.10%
81	39.13%	58.16%	36.27%	55.34%	32.02%	47.65%	54.25%	60.14%	52.69%	53.47%	43.15%	61.97%	66.67%	56.57%	65.32%	54.46%	62.50%	61.54%	45.69%
80	43.48%	61.16%	39.71%	60.08%	36.52%	50.12%	57.76%	63.67%	55.09%	58.72%	46.19%	61.97%	66.67%	58.59%	67.74%	58.22%	62.50%	67.69%	49.57%
79	45.96%	64.17%	43.14%	63.83%	40.45%	53.41%	60.02%	66.96%	57.49%	62.65%	48.31%	66.20%	66.67%	60.61%	70.97%	61.03%	75.00%	70.77%	53.02%
78	48.14%	67.54%	45.59%	67.19%	43.26%	56.59%	62.17%	70.14%	60.48%	66.71%	51.56%	67.61%	66.67%	61.62%	71.77%	64.32%	75.00%	75.38%	55.17%
77	51.55%	70.36%	47.55%	68.87%	45.51%	59.53%	64.44%	72.37%	62.87%	69.99%	54.00%	67.61%	71.43%	64.65%	74.19%	68.54%	75.00%	75.38%	57.76%
76	54.04%	73.73%	49.02%	70.85%	47.19%	61.41%	67.27%	74.60%	66.47%	72.35%	57.11%	70.42%	71.43%	65.66%	79.03%	72.30%	75.00%	76.92%	61.21%
75	56.52%	75.80%	51.47%	72.63%	50.00%	64.35%	69.08%	76.19%	68.26%	76.28%	59.30%	77.46%	71.43%	66.67%	79.84%	75.59%	75.00%	78.46%	65.09%
74	57.76%	77.49%	53.43%	74.70%	52.81%	66.71%	71.12%	78.07%	70.06%	78.24%	61.28%	78.87%	71.43%	67.68%	80.65%	79.34%	75.00%	80.00%	66.81%
73	59.63%	79.36%	56.37%	76.78%	53.93%	68.71%	73.16%	80.25%	70.06%	79.69%	64.39%	80.28%	71.43%	70.71%	82.26%	80.28%	75.00%	80.00%	69.40%
72	61.18%	80.68%	57.84%	78.36%	55.06%	69.65%	74.86%	82.54%	72.46%	82.18%	66.91%	81.69%	71.43%	71.72%	82.26%	82.16%	87.50%	80.00%	73.71%
71	63.98%	81.61%	59.31%	80.34%	58.43%	71.41%	77.01%	84.60%	73.05%	83.09%	68.83%	81.69%	71.43%	76.77%	82.26%	84.04%	87.50%	83.08%	74.57%
70	64.91%	82.93%	61.76%	82.61%	59.55%	73.53%	79.50%	86.48%	78.44%	85.71%	71.61%	84.51%	76.19%	79.80%	83.87%	85.92%	87.50%	84.62%	78.02%

Percentage of proposals below threshold (<70)	35.09%	17.07%	38.24%	17.39%	40.45%	26.47%	20.50%	13.52%	21.56%	14.29%	28.39%	15.49%	23.81%	20.20%	16.13%	14.08%	12.50%	15.38%	21.98%
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**How to interpret this table**

The percentage of proposals above the overall threshold and with a given score or higher is shown per ranking list. Green shows the funding range. Proposals below the overall threshold are shown separately and are not part of the cumulative total.

For example:

- in the CAR ranking, 5.28% of all proposals submitted in the ranking list ( total 322) scored 95 or higher. The funding cut off is between 91 and 92.
- in the ST-PHY ranking, 23.98% of all proposals submitted in the ranking list (total 763) scored 88 or higher. The funding cut off is at 90.
- in the GF-SOC ranking, 21.98 % of the proposals scored less than 70, meaning that 78.02% score more than 70.

# **MSCA Individual Fellowships: the proposal step by step**

- 📌 Automatically compiled by the system starting from the administrative information provided
- 📌 Important parts you are going to explicitly write:
  - 📌 the **title and acronym**
  - 📌 the **abstract/summary**
  - 📌 the **ethics assessment (if any)**

<i>Section</i>	<i>Title</i>	<i>Action</i>
1	General information	
2	Participants & contacts	
3	Budget	
4	Ethics	
5	Call-specific questions	

- The title and the acronym may be important because it could help remembering your project among several of those analysed by the reviewers
- Choose a significant and meaningful title that with few words summarise to goal of your project
- Make it so that you can build a **nice** acronym out of it :)

*Valid for any proposal,  
not only MSCA*

**NITEC: a Negative Ion Time Expansion Chamber**



*My MSCA Individual Fellowship (2015-17)*

**NICE: a Negative Ion Chamber Experiment**



*My StG  
(approved "A"+"A", but  
not funded, 2015-16)*

**INITIUM: an Innovative Negative Ion Time projection chamber for Underground dark Matter searches**



*My CoG  
(2019-24)*

**VITHAMM: Vortices, Instabilities and Turbulence in the Heart: an Accurate Multiphysics Model**



*My MSCA proposal (2016)*

## *Need to synthesise in few and effective words:*

### 1. Summary

The goal of this project is the construction of a Negative Ion Time Projection Chamber (NITPC) with triple Gas Electron Multiplier amplification and pixel readout (GEMPix) for directional Dark Matter (DM) searches. DM is 5 times as prevalent as normal matter in the Universe, but its identity remains unknown. Its mere existence implies that our inventory of the basic building blocks of nature is incomplete: deciphering its nature is one of the most compelling tasks for fundamental physics and astronomy. Weakly Interacting Massive Particles (WIMP) are well motivated DM candidates, independently predicted by Standard Model extensions and Big Bang cosmology. Direct detection experiments aim at observing very low energy (10-100 keV) nuclear recoil of WIMP scattering in the matter. While today leading experiments have managed to reach excellent rejection for electromagnetic components, other background sources (such as neutrinos and environmental radioactivity) will forbid to even think larger mass next-generation detectors without a drastic change in technology (See Fig.1). We believe that the combination of the large volumes and improved position and energy resolutions provided by the negative ion technique, together with the excellent performances of the GEMPix, can offer a significant contribution to this research field. In a NITPC, negative ions drift rather than free electrons, drastically reducing diffusion thanks to their higher mass. This is why we want to combine for the first time this idea with one of the most advanced readout, the GEMPix: a triple GEM detector coupled to a Medipix ASIC board, able to provide excellent spatial, energy and time resolutions. Its sensitivity to single ionization cluster will allow this NITPC, together with the slow motion of the anions, to function effectively as a Time Expansion Chamber, hence NITEC. It is important to notice how the NITEC concept could work also as neutrino-less double beta decay detector, X-ray polarimeter and micro-dosimeter for hadrotherapy.

NITEC will give the Experienced Researcher (ER) the chance to grown personally and professionally to the level of a completely independent and mature researcher, while expanding her expertise in gas detector R&D and rare events search. At the same time, it will provide the beneficiary important opportunities to broaden its proficiency and research activities.

- The objective of the project: start with “**The goal of this project is..**”
- The importance and timeliness of the subject under study: “**Deciphering Dark Matter nature is one of the most compelling tasks for fundamental physics today**” (example)
- The **innovation** brought by the project to the state of the art
- How you will implement the project: **feasibility**
- How and why the MSCA recipients (both ER and Institute) will **benefit** from it: “**chance to grow professionally to independent researcher (ER)/broaden research activities (Institute)**”

*Keep repeating same words/concepts through the whole proposal*

*This will become the **skeleton** of the proposal*

**1. EXCELLENCE**

- The objective of the project: start with **“The goal of this project is..”**

**2. IMPACT**

- The importance and timeliness of the subject under study: **“Deciphering Dark Matter nature is one of the most compelling tasks for fundamental physics today” (example)**

**3. IMPLEMENTATION**

- The **innovation** brought by the project to the state of the art

**4. CV OF THE EXPERIENCED RESEARCHER**

- How you will implement the project: **feasibility**

**5. CAPACITIES OF THE PARTICIPATING ORGANIZATIONS**

- How and why the MSCA recipients (both ER and Institute) will **benefit** from it: **“chance to grow professionally to independent researcher (ER)/broaden research activities (Institute)”**

*Keep repeating **same words/concepts** through the whole proposal*

# Form B: the project

- 1. EXCELLENCE**
- 2. IMPACT**
- 3. IMPLEMENTATION**
- 4. CV OF THE EXPERIENCED RESEARCHER**
- 5. CAPACITIES OF THE PARTICIPATING ORGANIZATIONS**

**Note that the project will take shape only when you start writing it... so you better start asap!**

*1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

## SCIENTIFIC CORE

Note that both parts matter  
**EQUALLY**

## TRAINING & KNOWLEDGE TRANSFER

*1.2 Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host*

*1.3 Quality of the supervision and of the integration in the team/institution*

*1.4 Potential of the researcher to reach or re-enforce professional maturity/independence during the fellowship*

## 1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects

### Introduction —> The scientific background

- ◆ What is DM?
- ◆ How can you measure it?
- ◆ Timeliness

### State-of-the-art

Collaboration	Technology	Target	Amplification + Readout	Volume ( $m^3$ )	Country
DRIFT	NITPC	$CS_2, CS_2:CF_4$	MWPC	1	UK-US
DMTPC	TPC	$CF_4$	mesh chambers + Optical CCD	0.02	UK-US
NEWAGE	TPC	$CF_4$	Micro Pixel Chamber $\mu$ PIC	0.02	Japan
MIMAC	TPC	$^3He/CF_4$	pixelized Micromegas	0.006	France
D <sup>3</sup> (prototype)	TPC	$CF_4$	double GEM + pixel	$1 \times 10^{-6}$	US
NITEC	NITPC	$CS_2/CH_3NO_2:CF_4$	triple GEM + pixel	0.005	Italy

Table 1: Summary of main characteristics of all the existing directional dark matter detectors, together with the proposed prototype

- ◆ what is the current experimental standard?
- ◆ what about future experiments?
- ◆ you may use bullet points or a **table**

*Example on how to summarise the state of the art of 5 different directional Dark Matter experimental approach in one table, underlining the important aspects and contextualising them to the project*

*1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

**Explain the originality and the interdisciplinarity (if applicable) of the proposal**

“The research is multidisciplinary because aims at connecting different branches of engineering and physics with medicine.”

**Explain the research objectives**

3 to 5 ambitious research objectives explained in 5-15 lines

use **bold** to emphasize the keywords and keep the referee’s attention

“Objective 1 : Build an **integrated electro-fluid-structure model** to perform high-fidelity simulations of an animated left ventricle and elastic aortic root with implanted natural aortic and mitral valves. This will be achieved by using my advanced computational skills<sup>12</sup> to combine my electrophysiology code (see Methodology section) with the state-of-the-art FSI solver developed by the Supervisor [...]

Objective 2 : ...”

*1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

## **Explain the methodology**

The method should result from the combination of the technical skills of the ER and of the Supervisor's group

**“Geometry: [...]**

**Electrophysiology: [...]**

**Fluid solver: [...]**

**Mechanical solver: [...]**

## *1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

### **Explain the methodology**

The method should result from the combination of the technical skills of the ER and of the Supervisor's group

#### **Avoid compact blocks of text!**

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## 1.1 *Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

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## 1.1 *Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects*

### Explain the methodology

The method should result from the combination of the technical skills of the ER and of the Supervisor's group

#### Avoid compact blocks of text!

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## *1.2 Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host*

- Explain what new knowledge the experienced researcher will gain during the fellowship at the hosting organisation(s) and how it will be acquired.

The project will help you to further strengthen your skills and to gain scientific independence

“The Supervisor long-lasting experience will be transferred through the close collaboration” [...]

“The MSCA will give the ER the chance to manage and fulfill a project for the first time completely on her own, a new fundamental experience to further develop her carrier”

Strengthen your skills

“The PoF group at UT is world-leading in computational methods applied to fluid mechanics.

There I will learn the **immersed boundary** technique whose advantage lies in ...”

Get new skills

“I will also **train different areas of expertise which are outside the core of fluid mechanics**, thanks to the close collaboration with the cardiologists team already started by the PoF group. This point is essential to improve my knowledge on human physiology, heart pathologies and diagnostics.”

## *1.2 Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host*

- Outline the previously acquired knowledge and skills that the researcher will transfer to the host organisation(s).

In general

“NITEC will be the first R&D project in Italy on directional DM gaseous detector possibly opening new research lines”

In particular

“GEMPix developed by LNF will be employed in a new environment. This will be an innovation for LNF”

During the action the researcher will transfer her/his skills to the new collaborators

“The LNF will benefit from the skills the ER gained in the previous state-of-the-art experiments she worked in: data analysis, tracking algorithm, simulation and study for planning of a new experiment.”

## 1.3 *Quality of the supervision and of the integration in the team/institution*

**it is about the CV of the Supervisor and of the collaborators**

- ◆ Emphasize the aspects related to your project
- ◆ Report her/his experience of student mentoring (former PhDs and researchers)
- ◆ Describe how you will be integrated in the group and interact with the collaborators

“The ER will be the focus of all activities and will coordinate the department”

“The ER and the Supervisor will draw together a career development plan and held fortnightly meetings to monitor the advancement and define the strategy”

“Not only the Supervisor is an expert in FSI simulations applied to hemodynamics, but he also showed how the vortex dynamics generated by implanted artificial valves has relevant clinical implications.”

”PoF group has an extensive experience in hosting researchers from previous European framework programmes”

## *1.4 Potential of the researcher to reach or re-enforce professional maturity/independence during the fellowship*

**explain why the project will help you becoming an independent researcher**

- ◆ Researchers should **demonstrate** how their existing professional experience, talents and the proposed research will contribute to their development as independent/mature researchers **during the fellowship**.
- ◆ Explain the new competences and skills that will be acquired and how they relate to the researcher's existing professional experience.

“This project will give me the opportunity to specialize in some of the emerging topics of [...]”

“This will give the ER the chance to improve and expand not only her specific scientific know-how in gaseous detector development, but especially her management and team coordination skills. “

## 2.1 *Enhancing the future career prospects of the researcher after the fellowship*

- ◆ Explain the expected impact of the planned research and training on the future career prospects of the experienced researcher after the fellowship.
- ◆ Outline clearly the career goals of the researcher and how the planned research and training are likely to contribute to their achievement.
- ◆ Focus on how the new competences and skills can make the researcher more successful in their long-term career

“I will gain the ability to carry out research with greater impact via working on cardiac fluid mechanics, that will be achieved by collaborating with medical doctors and cardiac surgeons and by training myself in conducting hemodynamics simulations. “

“this project will help me apply for research funding and build industrial relations”

“The leading position she (the ER) will have in the realization of NITEC will give her the final accomplishment she needs for a mature and completely independent academic career.”

## *2.2 Quality of the proposed measures to exploit and disseminate the project results*

**how the new knowledge generated by the action will be disseminated and exploited to the scientific community**

Dissemination through scientific papers, conferences, INFN network

"The new knowledge generated by the action will be disseminated to the scientific community primarily through publication in high-impact scientific journals"

"The results will be presented in international conferences, including ..."

**how the new knowledge generated by the action will be disseminated to industry, professional organization. Describe potential commercialization and how intellectual property rights will be dealt with.**

"During the whole project I will give regular software demonstrations to different audiences, including doctors in hospitals "

you may evaluate the feasibility of starting a spin-off

### *2.3. Quality of the proposed measures to communicate the project activities to different target audiences*

- ❖ Demonstrate how the planned public engagement activities contribute to creating awareness of the performed research.
- ❖ Demonstrate how the results will be made known to the public in such a way to be understood by non-specialists

European Researchers' Night

Research activities for students (primary and/or secondary)

“I will participate to the open days (OD in the Gantt chart) periodically organized by UT presenting the fascinating aspects of fluidmechanics and biofluidmechanics, as I did during my PhD at “fetes de la science” at EPFL where I have volunteered twice. “

### 3.1 Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources

- ◆ Describe the implementation through the Working Packages (WPs)
- ◆ Use lists and bullet points
- ◆ Explain how the WPs depend on each other
- ◆ Choose realistic timings
- ◆ Use the GANTT CHART
- ◆ Define Milestones and Deliverables

Month	1-4	5-8	9-12	13-16	17-20	21-24
WP1	■					
WP2		■				
WP3			■			
WP4				■		
WP5					■	
WP6						■
Deliverable			■ 1.1	■ 2.1	■ 3.1	■ 4.1
Milestone				■		
Conferences				■	■	■
Workshop				■	■	■
Seminar				■	■	■
Dissemination				■		■
Public Engagement		■		■		■

Milestones are control points in the action that help to chart progress.

“Our fundamental milestone is the measurement and assessment of NITEC working point: if it will not be working as expected, we will need to redesign and rebuilt it”

A **deliverable** is a distinct output of the action

“NITEC prototype, laser calibration system, measurement of NITEC working point and performances, data analysis ecc”

### 3.2 *Appropriateness of the management structure and procedures, including risk management*

Describe the organisation and management structure

"UT has an extensive experience with MSC fellows which will ensure smooth implementation of relevant procedures"

Describe the progress monitoring mechanisms put in place, to ensure that objectives are reached

"We will have a flat organizational structure, where the ER in liaison with the Supervisor will coordinate the activities"

"Activities are split into three technical and one clinical applicative WP, each articulated into realistic and verifiable (through 3-5 milestones and deliverables) tasks. "

Describe the frequency of the meetings

"The planned weekly meetings with the supervisor, will ensure the progress in training, the two-way transfer of knowledge with the host institution and the possibility of corrective actions "

**Report potential risks may occur during the project implementation and their corresponding backup solutions**

"In the event of delayed validation of the model against experimental data and/or availability of the clinical data, the tasks associated to M2.1 and M2.2 will be anticipated to extend the time needed for the model validation."

"Data processing will be performed immediately after preliminary simulations so as to implement possible corrective actions in a timely manner. "

### 3.3 *Appropriateness of the institutional environment (infrastructure)*

Explain the active contribution of the beneficiary to the research and training activities

Describe the infrastructure, logistics, and facilities offered by the beneficiary for the good implementation of the action.

“clean room, BTF, XLAB, mechanical and electronic workshop”

“the group owns dedicated computing facilities, which encompass several clusters and are being steadily expanded, including technical support in the realization of computing tasks. Furthermore, the PoF group has regular access to surfSARA, the top high-performance computing facility in the Netherlands. “

Describe the main tasks and commitments of the beneficiary and all partner organisations (if applicable).

“technical experience, large gas detectors, GEM”

- ◆ Short CV, 3-5 pages
- ◆ Cite your own papers within the CV (PhD and Master thesis, responsibility of data analysis, data acquisition, ecc)
- ◆ Emphasize the mobility
- ◆ Describe your ability in solve new problems and challenges (change experiment, change research field, change laboratory, ecc)
- ◆ Describe administrative and responsibility positions (conveener of working groups or conferences, responsibility of data analysis, run coordination, ecc)
- ◆ Write the experiences and skills that are useful to accomplish the project (monitoring, data analysis, simulation of gas detector HEP and DM)

## 5. CV of the Experienced Researcher

Name: Elisabetta  
 Surname: Baracchini  
 Date of birth: 26/04/1982  
 Place of birth: Rome, Italy  
 Telephone: +41 787 836 227, +39 328 358 4926  
 E-mail: [baracchi@icppp.s.u-tokyo.ac.jp](mailto:baracchi@icppp.s.u-tokyo.ac.jp), [baracchi@gmail.com](mailto:baracchi@gmail.com)

## Curriculum Vitae

### Current Position

April 2012 - Present

Project Researcher at the International Center for Elementary Particle Physics (ICEPP) of the University of Tokyo, Japan, for the MEG experiment, fully based at Paul Scherrer Institut (PSI), Villigen, Switzerland.

### Previous Positions

January 2012 - March 2012

Researcher in the framework of the European project "Research Chairs of Excellence Based University - Universities of Paris" (RBUCE-UP) at the Laboratoire de l'Accélérateur Linéaire (LAL), Orsay Cedex, France, for the SuperB project.

March 2011 - December 2011

Cooperative Researcher for the Lepton Flavour Violation group of the Institute for Particle and Nuclear Studies (IPNS) at the High Energy Accelerator Research Organization (KEK), Tsukuba, Japan, for the MEG experiment, fully based at the Paul Scherrer Institut (PSI), Villigen, Switzerland.

November 2008 - March 2011

PostDoctoral Scholar Employee for the Department of Physics and Astronomy, University of California Irvine, USA, for the MEG experiment, fully based at Paul Scherrer Institut (PSI), Villigen, Switzerland.

### Qualifications

January 2014

Italian national scientific qualification as Associate Professor in the sector "02/A1 - Experimental Physics of Fundamental Interactions"

September 2009

Italian national scientific qualification for fixed-term employment as III level Researcher for the INFN.

### Education

2nd February 2009

PhD thesis defense with grade "optimum". Thesis title "Search for  $B \rightarrow lv$  at BaBar with  $l = (e, \mu)$  and Phenomenological Implications"<sup>13</sup>, PhD tutors: Dr. R. Faccini, Dr. G. Isidori and Dr. G. Piredda. PhD student in Physics at Università "La Sapienza" of Rome (October 2005 - October 2008)

23rd June 2005

Graduation thesis defense with grade 110/110 cum laude. Thesis title "Correzioni radiative ai decadimenti in due corpi del mesone  $B^{*0}$ ", tutors: Prof. F. Ferroni, Dr. G. Cavoto and Dr. G. Isidori. Student in Physics at Università "La Sapienza" of Rome. (September 2000 - June 2005)

<sup>13</sup> B. Aubert et al. [BABAR Collaboration], Phys. Rev. D 79 (2009) 091101

<sup>14</sup> E. Baracchini and G. Isidori, Phys. Lett. B 631 (2006) 309.

B. Aubert et al. [BABAR Collaboration], Phys. Rev. D 75 (2007) 012008.

- ◆ Short CV, 3-5 pages
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- ◆ Emphasize the mobility
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- ◆ Write the experiences and skills that are useful to accomplish the project (monitoring, data analysis, simulation of gas detector HEP and DM)

Example of CV sections:

- \* **Personal information**
- \* **Research interests**
- \* **Education**
- \* **Additional schools an trainings**
- \* **Languages**
- \* **Awards and fundings**
- \* **Teaching and students supervision**
- \* **Published journal papers**
- \* **Under review journal papers (if important)**
- \* **Peer-reviewed conference papers**
- \* **Conferences contributed and invited talks**

# Budget rules

HORIZON 2020 – Work Programme 2016-2017

Marie Skłodowska-Curie Actions

## EU contribution and applicable unit costs

The EU contribution under the Marie Skłodowska-Curie actions is based on unit costs expressed in person-months. They have been established in line with the methodology set up by Commission Decision No C(2013) 8194<sup>28</sup>.

	Researcher unit cost in EUR person/month			Institutional unit cost in EUR person/month	
	Living Allowance	Mobility Allowance	Family Allowance	Research, training and networking costs	Management and indirect costs
<b>Individual Fellowships</b>	4,650	600	500	800	650

Will comment this in the “how to” part

## B.1 Research, training and networking costs

This unit cost amounts of

**800 EUR for month**

Is managed by the beneficiary to contribute to expenses related to :

costs for training and networking activities that contribute directly to the researcher’s career development (e.g. participation in conferences, trips related to the work of the action, training, language courses, seminars, lab material, books, library records, publication costs)

costs for research expenses

## B.2 Management and indirect costs

This unit cost amounts of

**650 EUR for month**

- Costs associated with the preparation of the reports and other documents required by the REA: - Researcher declarations, deliverables, 1st year progress report, periodic
- The overall legal, ethical, financial and administrative management for the beneficiary.
- Indirect costs of the project beneficiary

My budget		Country	Country Coefficient	Number of Person Months	Researcher Unit Cost			Institutional Unit Cost		TOTAL
Participant Number	Organisation Short Name				Living Allowance	Mobility Allowance	Family Allowance	Research, training and networking costs	Management and Overheads	
1	INFN	IT	1,067	24	119 077	14 400	0	19 200	15 600	168 277
Total				24	119 077	14 400	0	19 200	15 600	168 277

# Budget rules

HORIZON 2020 – Work Programme 2016-2017

Marie Skłodowska-Curie Actions

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<b>Individual Fellowships</b>	4,650	600	500	800	650

Will comment this in the “how to” part

## B.1 Research, training and networking costs

## B.2 Management and indirect costs

This unit cost amounts to

800

Is managed by the beneficiary related to:

costs for training and networking activities that contribute directly to the researcher’s career development (e.g. participation in conferences, trips related to the work of the action, training, language courses, seminars, lab material, books, library records, publication costs)

costs for research expenses

Note that the amount of funding is fixed and does not depend on the research project!  
-> Be careful and verify the beneficiary provides for the necessary tools and infrastructures

This unit cost amounts to

progress report, periodic

- The overall legal, ethical, financial and administrative management for the beneficiary.
- Indirect costs of the project beneficiary

the reports  
the REA: -  
1st year

My budget		Country	Country Coefficient	Number of Person Months	Researcher Unit Cost			Institutional Unit Cost		TOTAL
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