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Diffusive shock acceleration in galactic wind bubbles

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Starburst Galaxies (SBGs) and Active Galactic Nuclei (AGNi) can launch and sustain powerful outflows of very high velocity and large opening angle.
Such winds develop a bubble structure characterized by an inner wind shock and an outer forward shock.
During the time the forward shock expands in the surrounding medium, the inner wind shock quickly decelerates while remaining strong, thereby creating ideal conditions for stationary particle acceleration.
We model the diffusive shock acceleration process at the wind shock of such winds and we explore the multi-messenger implications in terms of high energy photons, neutrinos and escaping cosmic rays.

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