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Pulsar Wind Nebulae: haloes, jets and the problem of particle escape.

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Pulsar and Pulsar Wind Nebulae are among the most interesting high-energy astrophysical sources, and they provide us with a unique laboratory where relativistic processes can be studied and characterised in high details. They rank among the most efficient particle accelerators in the universe. The recent discovery of jet-like misaligned features and extended TeV haloes around old PSR moving through the ISM, have raised interesting theoretical question on the confinement of accelerated particles, and their escape properties. I will discuss the role of PWNe as high-energy TeV to PeV sources, our current understanding of their dynamics and particle acceleration properties, in the light of both current and future gamma-ray observatory, as well as our current understanding of the origin and properties of these escaping flows.

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