

Executive summary for “Origin of the very high energy gamma-ray emission from pulsar wind nebulae”:

- *What is this contribution about?*

We simulate here, from first principles, the acceleration of electrons and positrons at pulsar wind termination shocks, and then calculate their gamma-ray emission at \sim TeV-PeV energies.

- *Why is it relevant / interesting?*

These are the first numerical simulations to demonstrate, from first principles, the possibility of accelerating electrons up to, at least, \sim PeV energies at pulsar wind termination shocks, and to calculate self-consistently their UHE gamma-ray emission at \sim PeV energies.

- *What have we done?*

We integrate individual electron and positron trajectories in a prescribed model of the magnetic field and flow pattern in the termination shock region of a striped pulsar wind, and calculate the X-ray synchrotron and inverse Compton emission (in the \sim TeV-PeV energy range) from accelerated particles.

- *What is the result?*

We find that the observed $>$ TeV gamma-ray emission from the Crab Nebula can be well reproduced for reasonable parameters of the Crab pulsar wind and nebula, and that future observations by LHAASO at \sim PeV energies will place further, important constraints on unknown parameters of the pulsar wind.