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A local fading accelerator and the origin of TeV cosmic ray electrons

S. Recchia, S. Gabici, F. Aharonian and J. Vink

UNIVERSITÀ DEGLI STUDI DI TORINO

- CR electrons have been observed up to ~ 20 TeV, while the positron fraction drops above ~400-500GeV. The severe energy losses suffered by multi-TeV leptons in the ISM poses strong constraints on the age and distance of the possible sources, with t_{loss}(20 TeV) ~ 20 kyr and d~100-500 pc (depending on the interstellar diffusion coefficient).

- With such constraints it is possible that few sources, or maybe only one, may dominate the multi-TeV electron spectrum.

- We show that a single local, d~100 pc, electron TeVatron, of age ~ 100 kyr, which injects electrons with a luminosity that decreases over a timescale of ~10kyr, can account for the observed multi-TeV spectrum. Such source should also produce mainly electrons over positrons.

- With this information it is possible to investigate the nature of the possible source(s) of high energy electrons, and possibly, to identify such astrophysical object