

Particle acceleration in relativistic magnetized shocks revisited: the role of global magnetic nulls

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It is broadly accepted that particle acceleration in relativistic perpendicular shocks is quenched even at moderately low upstream magnetization. Using particle-in-cell simulations, I will show that the presence of a global magnetic null in the upstream flow leads to an opposite conclusion. The formation of strong current densities, combined with large-scale velocity shear flows drive strong plasma turbulence and efficient non-thermal particle acceleration near the Bohm limit. I will discuss these results and their astrophysical implications in the context of pulsar wind nebulae and giant radio lobes.