

PRESENT STATUS OF PARTICLE ACCELERATION IN RELATIVISTIC OUTFLOWS

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Relativistic outflows are ubiquitous in high-energy cosmic phenomena. Whether their reservoir of free energy at launch is in the form of bulk kinetic, magnetic or gravitational, it is ultimately channeled into energetic particles and non-thermal radiation. A key question is to understand how this transfer operates efficiently and under which conditions. In this talk, I will review some of the recent developments in the modeling of three particle acceleration processes, namely relativistic diffusive shock acceleration, relativistic magnetic reconnection and collisionless turbulence. These results will be discussed in the context of pulsars and pulsar wind nebulae, black hole magnetospheres and relativistic jets.

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