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Non-thermal particle acceleration in astrophysical shear flows.

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The non-thermal radiation seen from astrophysical objects bears witness to the presence of energetic charged particles that have experienced efficient acceleration within these sources.

Shear flows are naturally expected in many of these environments. Combined with new observational results in the radio and high energy gamma-ray domain and with progress in our understanding of turbulence modelling, this has given fresh impetus to shear acceleration and emission scenarios.

Here we will review key results concerning the stochastic acceleration of energetic electrons and protons in gradual shear flows, highlight expected spectral characteristics and report on recent applications in the context of expanding relativistic outflows.

Author: RIEGER, Frank (MPIK and Univ. of Heidelberg)

Presenter: RIEGER, Frank (MPIK and Univ. of Heidelberg)

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