

# Rapidly rotating spacetimes and collisional super-Penrose process

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## Abstract

© 2016, Springer Science+Business Media New York. We consider generic axially symmetric rotating spacetimes and examine particle collisions in the ergoregion. The results are generic and agree with those obtained in the particular case of the rotating Teo wormhole in Tsukamoto and Bambi, Phys Rev D 91:104040, 2015. It is shown that for sufficiently rapid rotation, the energy of a particle escaping to infinity can become arbitrary large (so-called super-Penrose process). Moreover, this energy is typically much larger than the center-of mass energy of colliding particles. In this sense the situation differs radically from that for collisions near black holes.

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## Keywords

Energy extraction, Ergoregion, Particle collision