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Kinematics of ultra-high energy particle collisions near black holes in the magnetic field

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Abstract

© 2015 World Scientific Publishing Company. There are different versions of collisions of two particles near black holes with unbound energy E_{cm} in the center of mass frame. The so-called BSW effect arises when a slow fine-tuned "critical" particle hits a rapid "usual" one. We discuss a scenario of collision in the strong magnetic field for which explanation turns out to be different. Both particles are rapid but the nonzero angle between their velocities (which are both close to c , the speed of light) results in a relative velocity close to c and, hence, big E_{cm} .

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Keywords

BSW effect, magnetic field