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B. Juraev: Acceleration and radiation of cosmic rays nearby astrophysical black holes

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In many astrophysical scenarios, the charge of the black hole is often neglected due to unrealistically large values of the charge required for the Reissner-Nordstrom spacetime metric. Black holes, however, might have a small electric charge because of various methods for selective accretion. We study how an imaginary small electric charge on a Schwarzschild black hole affects the ionization of a freely falling neutral particle and how the ionized particle thereafter escapes from the black hole. We demonstrate the ultra-high energy of ionized particles and discuss the distinctive signs of particle acceleration by weakly charged black holes. Next, we will look for the radiation of the charged particle in the vicinity of the weakly charged Schwarzschild black hole. We study depending on the sign of Coulomb force radiating charged particle spirals down to the black hole or stabilizes the circular orbit.

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