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Electromagnetic self-force as a cosmic censor PETER ZIMMERMAN, IAN VEGA, ERIC POISSON, University of Guelph — Hubeny identified a scenario in which a charged particle falling toward a near-extreme Reissner-Nordstrom black hole can penetrate the black hole and drive it beyond the extremal limit, thereby giving rise to an apparent violation of cosmic censorship. A version of this scenario, relevant to a Kerr black hole and involving a particle with orbital and/or spin angular momentum, was recently examined by Jacobson and Sotiriou (following up on earlier work by Hod); here also the black hole is driven beyond the extremal limit. The Hubeny analysis was inconclusive, however, because in her scenario the particle crosses the horizon with a near-vanishing acceleration; the test-body acceleration is of the same order of magnitude as the acceleration produced by the particle's own electromagnetic self-force, which was not incorporated in the analysis. In this talk we report on our computation of the electromagnetic self-force acting on a charged particle falling radially toward a Reissner-Nordstrom black hole, and we reveal whether the self-force acts as a cosmic censor by preventing the particle from reaching the event horizon.

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