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Exact force-free electrodynamic solutions and their perturbations[1] FAN ZHANG, Beijing Normal University, West Virginia University, LUIS LEHNER, Perimeter Institute for Theoretical Physics, CIFAR, SEAN MCWILLIAMS, West Virginia University, HARALD PFEIFFER, Canadian Institute for Theoretical Astrophysics, Canadian Institute for Advanced Research, HUAN YANG, Perimeter Institute for Theoretical Physics, University of Waterloo — This talk is an amalgamation of several works relating to finding exact force-free electrodynamic (FFE) solutions and examining their behaviour under perturbations, both analytically and numerically. The talk will briefly discuss technical points such as the choice of numerical FFE evolution systems and challenges posed by light surfaces when seeking analytical FFE solutions, presenting along the way a couple of new solutions in the near horizon extreme Kerr spacetime. It will then move on to present the mode structure of the perturbed Blandford-Znajek solution and some results concerning the stability of a family of exact propagating FFE solutions.

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