1052-83-153 **Lydia R Bieri*** (lbieri@math.harvard.edu), Harvard University, Department of Mathematics, Science Center, 1 Oxford Street, Cambridge, MA 02138. *Null Asymptotics of Solutions of the Einstein-Maxwell Equations in General Relativity and Gravitational Radiation.*

A major goal of mathematical General Relativity (GR) and astrophysics is to precisely describe and finally observe gravitational radiation, one of the predictions of GR. In order to do so, one has to study the null asymptotical limits of the spacetimes for typical sources. Among the latter we find binary neutron stars and binary black hole mergers. In these processes typically mass and momenta are radiated away in form of gravitational waves. D. Christodoulou showed that every gravitational-wave burst has a nonlinear memory. The insights of this work are based on the precise description of null infinity obtained by D. Christodoulou and S. Klainerman. Among the many pioneering results they derived the Bondi mass loss formula. This is all in the regime of the Einstein vacuum equations. N. Zipser studied the Einstein-Maxwell (EM) equations and computed limits along the lines of Christodoulou and Klainerman for this case. She derived a Bondi mass formula in the EM case. In this talk, we discuss the null asymptotics for spacetimes solving the EM equations, compute the radiated energy and derive limits at null infinity and compare them with the Einstein vacuum (EV) case. Here, we rely on the methods introduced in the works of Christodoulou and Klainerman, Bieri, Zipser. (Received August 25, 2009)