Critical Phenomena in the Gravitational Collapse of Electromagnetic Waves[1] MARIA PEREZ MENDOZA, THOMAS BAUMGARTE, Bowdoin College — Critical phenomena in the collapse of vacuum gravitational waves remain mysterious even 25 years after they were first reported. This case differs qualitatively from other, better understood examples of critical collapse in that the critical solution cannot be spherically symmetric. We report on critical phenomena in the gravitational collapse of electromagnetic waves, which also do not allow spherically symmetric solutions, but are easier to handle numerically than the vacuum case. Generalizing earlier results on dipolar initial data we consider higher multipole moments, which appear to lead to a bifurcation akin to similar effects observed in other highly aspherical cases.

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