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Amir Babak Aazami* (aaazami@clarku.edu), 950 Main St., Worcester, MA 01776. *The Ehlers-Kundt Conjecture in General Relativity.*

There is a beautiful class of spacetimes in Einstein's theory of General Relativity, known as pp-wave spacetimes. They model radiation in its various forms, and they are rich in beautiful properties. Among these is a particularly nice subclass, known as the plane wave spacetimes, which generalize electromagnetic plane waves in Maxwell's theory. In the 60s, Jurgen Ehlers and Wolfgang Kundt posed a (deceptively) simple conjecture:

“Prove the plane waves to be the only complete gravitational pp-waves.”

Even now, this question remains open – though a lot of progress has been made (including just last year). In this talk I will review this beautiful conjecture, describe where it stands today, and mention many of the principal actors. Surprisingly, this conjecture permits a very elegant viewpoint from dynamical systems theory, and therefore its resolution will be of interest to that community as well. (No background in General Relativity will be required for this talk.) (Received September 17, 2019)