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AYNUR BULUT*, aynurbulut@gmail.com. *Logarithmically energy-supercritical Nonlinear Wave Equations: axial symmetry and global well-posedness.*

In nonlinear dispersive PDE, radial symmetry often plays a key role in allowing for more refined analysis of the nonlinear interactions which could lead to possible blowup. We will describe recent work where we have recently introduced a mechanism for relaxing assumptions of radiality by considering symmetry in a subset of the variables (for instance, assuming that the initial data is axially symmetric). We applied this philosophy to show global well-posedness and scattering in for the nonlinear wave equation in the logarithmically energy-supercritical setting, generalizing a result of Tao which was established for the radial case. The uses Morawetz and Strichartz estimates that have been adapted to the new symmetry assumption. These methods in fact bring a new perspective to sharp estimates for the energy-critical problem, along the lines of the influential work of Ginibre, Soffer, and Velo. This is joint work with Ben Dodson. (Received September 09, 2019)