STEPHEN ANCO, Brock University

New conserved quantities for wave equations

A novel symmetry method is presented for finding conservation laws of wave equations without the need for any variational principle. The method uses symmetries connected with a Morawetz-type dilation identity to obtain conserved densities/fluxes in a direct, explicit fashion (somewhat analogously to Noether's theorem). As an illustration, new conservation laws are derived for a class of quasilinear radial wave equations (having no variational principle) in multi-dimensions.