

Multiple periodic solutions for the relativistic operator

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We discuss the existence of multiple periodic solutions to nonlinear perturbations of the relativistic operator:

$$u \mapsto \left(\frac{u'}{\sqrt{1 - |u'|^2}} \right)'.$$

We have in view a prescribed number of nonconstant periodic solutions for parameterized Fisher-Kolmogorov type nonlinearities, as well as the existence of geometrically distinct solutions when the nonlinear perturbations have periodicity properties with respect to the unknown variables. Our approaches rely on variational arguments. The talk will provide an overview of recent and ongoing work in this direction.

Based on joint work with Jean Mawhin and Călin Șerban.