MP 6: Postersession Mittwochnachmittag

Zeit: Mittwoch 16:15–16:30   Raum: Nordfoyer

MP 6.1 Mi 16:15 Nordfoyer

renormalization group solutions of nonlinear optics equations with arbitrary refractive index — •LARISA TATARINOVA and MARTIN GARCIA — theoretische physik, universitat kassel, heinrich-plett-str. 40, 34132 kassel, duetschland

Lie symmetry group analisis is a powerful tool for searching analytical solutions to both ordinal and partial differential equations. Yet only several problems of physical interest allow exact solution basing on this technique. A regular approach to apply this method to the boundary value problems of mathematical physics based on exact or approximate symmetries has been developed by Shirkov and Kovalev and called Bogoliubov Renormalization Group approach. In the present work we apply this method to the problem of intense laser beam propagation in a medium with arbitrary nonlinear index of refraction. We find analytical solutions by construction of approximate Lie-Backlund symmetries admitted by the eikonal equations. The obtained results are applied to the problem of ultra-short intense laser pulse propagation in air. They are in good quantitative agreement with numerical simulations and experimental results.