ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ


Εβδομαδιαίο Σεμινάριο

# Non-linear periodic waves in the Anti-de Sitter spacetime and islands of stability

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In 2006, Dafermos-Holzegel conjectured that the Anti-de Sitter spacetime is an unstable solution to the Einstein equations with negative cosmological constant under reflective boundary conditions. In 2018, Moschidis established new fascinating rigorous proofs of the conjectured instability in various settings. Moreover, Rostworowski-Maliborski studied evolution of a Klein-Gordon field coupled to the Einstein equations in spherical symmetry and enhanced the conjecture of Dafermos-Holzegel by providing strong numerical evidence that indicate the existence of "special" initial data leading to time-periodic and stable evolution. In this work, we develop a method that proves both the existence and the nonlinear stability over exponentially long times of small amplitude time-periodic solutions to several toy models on the fixed Anti-de Sitter background providing a rigorous proof for the numerical arguments of Rostworowski-Maliborski in a simpler setting. This is a joint work with Jacques Smulevici (Sorbonne Universite).

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Μετά την ομιλία ακολουθεί καφές και συζήτηση στο εντευκτήριο του Τμήματος.