

# **An alternative theory of asteroid dynamics (size and lifetimes of asteroidal resonances – application of complex spectral analysis)**

**Smiliana Dikova<sup>1</sup>, Tomyo Petrosky<sup>2</sup>**

<sup>1</sup>*Institute of Astronomy, Bulgarian Academy of Sciences*

<sup>2</sup>*University of Texas at Austin*

We obtain the size and lifetimes of some asteroidal resonances in the frame of the three-body problem Sun-Jupiter-Asteroid using the complex spectral analysis, developed by Brussels-Austin group directed by Nobel prize laureate Prof. Ilya Prigogine. Application of this new alternative theory to classical three-body problems permits to overcome the so called by Henry Poincare "Big difficulty of Celestial Mechanics"-small denominators. The breaking of time symmetry in the hearth of Celestial Mechanics leads to important discussion on principle of causality and predictability in modern Celestial mechanics.