

**ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ**  
**ΤΜΗΜΑ ΦΥΣΙΚΗΣ**  
**ΤΟΜΕΑΣ ΑΣΤΡΟΦΥΣΙΚΗΣ, ΑΣΤΡΟΝΟΜΙΑΣ ΚΑΙ ΜΗΧΑΝΙΚΗΣ**

**ΟΜΙΛΙΑ**

**ΘΕΜΑ: « On the continuation of degenerate periodic orbits in nearly integrable Hamiltonian systems: normal form approach and possible applications »**

**ΟΜΙΛΗΤΗΣ: Dr. Tiziano Penati**

**ΘΕΣΗ : Senior Researcher, Università Degli Studi di Milano**

**ΗΜΕΡΟΜΗΝΙΑ: Πέμπτη 6 Σεπτεμβρίου 2018**

**ΩΡΑ: 12:00, Σπουδαστήριο Μηχανικής**

**Περίληψη**

We reconsider the classical problem of the continuation of periodic orbits that arise from the breaking of a completely resonant maximal torus, in nearly integrable Hamiltonian systems.

We propose a suitable normal form construction that allows to identify and approximate the periodic orbits which survive to the breaking of the resonant torus. Our algorithm allows to treat the continuation of approximate orbits which are at leading order degenerate, hence not covered by the classical averaging methods. The extension to the case of low dimensional tori will be also commented.

Before entering the details of the normal form construction, the problem of existence of localized periodic orbits in chains of weakly coupled oscillators will be illustrated: this topic represents our main original motivation to study the breaking of resonant tori and could represent one of the applications of the extension to low dimensional tori.

**Η παρουσίαση θα γίνει στο Σπουδαστήριο Μηχανικής, 4<sup>ος</sup> όροφος, αίθουσα 24.**