



School of Nano Science



IPM Condensed Matter &
Statistical Physics Group

Weekly Seminar

The Concepts and Applications of Fractional Order Differential Calculus in Modelling of Viscoelastic Systems

Invited Speaker:

Dr. Yousef Jamali

Department of Applied Mathematics, School of Mathematical Sciences,
Tarbiat Modares University, Tehran, Iran
School of Nano Science, Institute for research in fundamental science (IPM)

Abstract:

Viscoelasticity and related phenomena are of great importance in the study of mechanical properties of material especially, biological materials. Certain materials show some complex effects in mechanical tests, which cannot be described by standard linear equation (SLE) mostly owing to shape memory effect during deformation. Recently, researchers have been applying fractional calculus in order for probing viscoelasticity of such materials with a high precision. Fractional calculus is a powerful tool for modelling complex phenomenon. In this presentation, we try present clear descriptions of the fractional calculus, its techniques and its implementation. The intention is to keep the details to a minimum while still conveying a good idea of what and how can be done with this powerful tool. We try to expose the audience to the basic techniques that are used to solve the fractional equations analytically and/or numerically. More specifically, modelling the shape memory phenomena with this powerful tool are studied from different perspectives, as well as presented some physical interpretation in this case.

Wednesday, 8 Shahrivar 1396 (30 Aug, 2017), 14:00-15:00

Seminar Room (Classroom A), Farmanieh Building, IPM