



School of Nano Science



IPM Condensed Matter &  
Statistical Physics Group

## Weekly Seminar

### **Composite quasiparticles in ultra-cold dipolar Fermi gases**

Invited speaker: *Dr. Saeed Abedinpour*

*Institute for Advanced Studies in Basic Sciences*

#### **Abstract:**

Dipolar quantum gases, thanks to their long-range and anisotropic dipole-dipole interactions, are excellent candidates for the exploration of quantum many-body behaviors. Many different exotic phenomena have been predicted for ultra-cold systems of dipolar bosons and fermions. Experimental advances in trapping and cooling polar molecules and magnetic atoms have been impressive too. In this talk, first I will review the ground-state properties of a two-dimensional system of dipolar fermions. Then, I will discuss quasiparticle properties and collective modes of this system and will show how a novel composite quasiparticle can emerge from the coupling between single-particle excitations and collective modes at strong interaction strengths.

**Wednesday, 15 Esfand 1397 (March 6, 2019), 14:00-15:00**

**Seminar Room (Classroom A), Farmanieh Building, IPM**