



IFMP Seminar

Date Monday, September 27, 2025, at 14:50

REC/C213

Zoom: 633 2801 2201, Passcode: IFMP2025-6

Speaker **Seunghyun Khim**
MPI-CPfS

Title **Locally Noncentrosymmetric Heavy-Fermion Systems**

Abstract CeRh₂As₂ has been attracting attention due to its unusual multiphase superconductivity. While the superconducting transition temperature (T_c) is relatively low, $T_c = 0.35$ K, the upper critical field (H_{c2}) is as high as 15 T when the field is applied along the c axis. This field-resilient superconductivity evidences spin-triplet pairing. Indeed, clear thermodynamic anomalies within the superconducting (SC) state indicate a field-induced transition between a spin-singlet even- to a spin-triplet odd-parity SC phase. CeRh₂As₂ crystallizes in the centrosymmetric CaBe₂Ge₂-type structure. The lack of local inversion symmetry at the Ce site gives rise to staggering antisymmetric spin-orbit couplings within the unit cell. This allows sublayer degrees of freedom for the SC order parameter to realize spin-triplet superconductivity. The lesson from the study of CeRh₂As₂ encourages us to explore further locally noncentrosymmetric heavy-fermion materials. In this talk, I will briefly summarize recent progress in understanding CeRh₂As₂ and discuss a strategy to search for further new materials with exotic spin-orbit-related phases.

Host: D. Peets