

# F-5 SEMINAR



## CONDENSED MATTER PHYSICS



***Friday, January 13, 2023  
at 10:30 AM***

*in the seminar room of physics (room 106)  
Condensed Matter Physics, Jožef Stefan Institute*

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### ***Physical properties of high-entropy alloys and other newly-discovered metals***

High-entropy alloys (HEAs) are metallic systems, in which a high entropy of mixing causes the stabilization of a multicomponent solid solution with four or more principal elements on simple crystal lattices (e.g. bcc, fcc, hcp). These alloys pose some interesting challenges for analyzing their physical properties – namely they contain multiple elements and interactions between them, furthermore they may exhibit micro- or nanostructure. I will briefly discuss superconductivity in Ta-Nb-Hf-Zr-Ti HEAs, but mostly concentrate on magnetism in high-entropy alloys (soft magnetism induced by the nanostructure in FeCoNiPdCu, frustrated magnetism in a homogenous Co-Cr-Fe-Mn-Ni HEA, etc.).

I will conclude with a postdoc result – the properties of a newly-discovered complex metallic alloy  $\text{Th}_4\text{Be}_{33}\text{Pt}_{16}$  with 212 atoms per unit cell – and by presenting an experimental technique for electrical transport measurements on pieces of new metallic materials using FIB lamellas of cca 10  $\mu\text{m}$  size.

***You are cordially invited to attend.***