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INSIGHT SEMINAR: Finding and enforcing topology in non-crystalline metals

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12:00 to 13:00
Elements Room

ABSTRACT:
Topological metals display physical phenomena different to conventional metals, both in solid-state and metamaterial realisations. These include Fermi-arc surface states, approximately quantised photoconductivity, and negative magnetoresistance. However, all realisations of topological metals are crystalline. What is a meaningful definition of topological metals in non-crystalline matter , such as amorphous or quasicrystalline systems? Can we enforce topology in non-crystalline metals? Do their topological Weyl nodes come i pairs as they do in crystals? In this talk I will propose tools to define topological meta s without translational symmetry, and introduce how to enforce them in any non-crystalli e system, by using average structural chirality. I will discuss some possible solid-state a

d photonic meta-material realisations

BIO:

Adolfo G. Grushin is a CNRS permanent researcher at the Neel Institute in Grenoble since 2017. His research focuses on theoretical topological matter, notably using tools from high-energy physics to understand topological phases. His current work develops the theory of non-crystalline topological materials, including amorphous solids and quasicrystals. He received his Ph.D. from the Universidad Autonoma de Madrid in 2013, after which he joined the Max Planck Institute for the Physics of Complex Systems in Dresden. Later he moved as a Marie Curie postdoctoral fellow to the Physics Department at UC Berkeley. In 2023 he was awarded the European Physical Society Early Career Award.

Hosted by: Prof. Dr. Carmen Rubio-Verdu, Prof. Dr. Darrick Chang, Prof. Dr. Adrian Bachtold