

# PHYSICAL MATH SEMINAR

Understanding the role of physicality in networks

## ALBERT-LÁSZLÓ BARABÁSI

Network Science Institute and Department of Physics, Northeastern University  
Division of Network Medicine, Harvard University  
Department of Network and Data Science, Central European University.



### ABSTRACT:

I will explore the applications of the network science toolset to physical networks, like the brain or metamaterials, which are networks whose links are physical entities that cannot cross each other. Link physicality affects both the evolution and the structure of a network, in a way that is not captured by current graph-based approaches. Yet, the existence of an exact mapping between physical networks and independent sets allows us to derive the onset of physical effects and the emergence of a jamming transition, demonstrating that physicality impacts the network structure even when the total volume of the links is negligible.

**TUESDAY, APRIL 16, 2024**

**2:30 PM – 3:30 PM**

**Building 2, Room 449**

<https://math.mit.edu/pms/>