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Networks In Real Space: Characteristics and Analysis for Biology and Mechanics CARL MODES, MARCELO MAGNASCO, The Rockefeller University, ELENi KATIFORI, University of Pennsylvania — Functional networks embedded in physical space play a crucial role in countless biological and physical systems, from the efficient dissemination of oxygen, blood sugars, and hormonal signals in vascular systems to the complex relaying of informational signals in the brain to the distribution of stress and strain in architecture or static sand piles. Unlike their more-studied abstract cousins, such as the hyperlinked internet, social networks, or economic and financial connections, these networks are both constrained by and intimately connected to the physicality of their real, embedding space. We report on the results of new computational and analytic approaches tailored to these physical networks with particular implications and insights for mammalian organ vasculature.

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