

# Seminario Matematico di Brescia

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## Graph-theoretical questions arising from DNA self-assembly

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11.00

*Aula Seminari  
DICATAM – Sezione di Matematica  
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Via Valotti 9, Brescia*

**Abstract:**

The chemical and physical properties of DNA strands contain a high degree of information which allows DNA to serve as building material for assembling nanostructures. These complexes have a wide range of applications, including drug delivery and molecular scaffolding. In this talk, we focus on assembling graph-like structures using branched junction DNA molecules which are star-shaped molecules that join together through adhesion sites at the end of their arms. We describe a combinatorial representation of these molecules and consider the problem of optimally building a target graph under different laboratory settings. We show how this question gives rise to new graph invariants and how these invariants can be studied through edge-colorings and graph decompositions.

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