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DOTTORATO

CYCLE 36th
ORAL DEFENCE OF THE PHD THESIS

Thursday 18th April 2024 – 11.00 am
Department of Mathematics
Seminar Room – Department of Physics
The event will take place in presence and online through the ZOOM platform.
To get the access codes please contact the secretary office

Gloria Tabarelli

PhD Student in Mathematics

Edge-colorings and flows in Class 2 graphs

Abstract:
We consider edge-colorings and flows problems in Graph Theory that are hard to solve for Class 2 graphs. Most of them are strongly related to some outstanding open conjectures, such as the Cycle Double Cover Conjecture, the Berge-Fulkerson Conjecture, the Petersen Coloring Conjecture and the Tutte's 5-flow Conjecture. We obtain some new restrictions on the structure of a possible minimum counterexample to the former two conjectures. We prove that the Petersen graph is, in a specific sense, the only graph that could appear in the statement of the Petersen Coloring Conjecture, and we provide evidence that led to propose an analogous of the Tutte's 5-flow conjecture in higher dimensions. We finally prove a characterization result and a sufficient condition for general graphs in relation to another edge-coloring problem, which is the determination of the palette index of a graph.

Supervisors: Prof. Giuseppe Mazzuoccolo and Prof. Peter Michael Schuster.