BI-CO MATHEMATICS COLLOQUIUM

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"Coloring graphs and beyond"

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Talk at 4:15 – Hilles 109

Tea 4:00 – Foyer outside of H109

Abstract:

Graph coloring procedures are widely used techniques to create and isolate different partitions of a graph. One such powerful procedure that can test when two graphs are not isomorphic is called the Wiesfeler-Leman (WL) Test. Recently, it was shown that the differentiating power of this test is equivalent to the expressivity of a graph neural network (GNN), allowing the WL test to serve as a blueprint for any generic GNN. Therefore, tests more powerful than the WL have been used to design neural networks that train on graph-based data that exhibit better expressivity than their "vanilla" counterparts. In this talk, we survey a few of these coloring procedures, before talking about a similar proposal of ours that involves simplicial sets.