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Lina Li* (linali2@illinois.edu). *Rainbow variants of the Erdős-Rothchild problem.*

In 1974, Erdős and Rothchild conjectured that $K_{\lfloor \frac{n}{2} \rfloor, \lceil \frac{n}{2} \rceil}$ has the maximum number of two-edge-colorings without monochromatic triangles among all n -vertex graphs. Since then, this new class of colored extremal problems has been extensively studied by many researchers on various discrete structures, such as graphs, hypergraphs, boolean lattices, and sets.

In this talk, we investigate the rainbow variants of the Erdős-Rothchild problem. Our first main result, confirming conjectures of Benevides, Hoppen, and Sampaio, and Hoppen, Lefmann, and Odermann, completes the characterization of the extremal graphs for the edge-colorings without rainbow triangles. We also studied a similar question on sum-free sets, in which we describe the extremal configurations for the colorings of integers without rainbow sums. (Received September 16, 2019)