Eulerian and bipartite partial duals

Metrose Metsidik

Xinjiang Normal University

metrose@163.com

Huggett and Moffatt characterized all bipartite partial duals of plane graphs in terms of all-crossing directions of their medial graphs. Then Metsidik and Jin characterized all Eulerian partial duals of plane graphs in terms of semi-crossing directions of their medial graphs. Plane graphs are ribbon graphs with genus 0. In this talk, by introducing the notion of modified medial graphs and using their all-crossing directions, we first extend Huggett and Moffatt’s result from plane graphs to ribbon graphs. Then we characterize all Eulerian partial duals of any ribbon graph in terms of crossing-total directions of its medial graph, which are simpler than semi-crossing directions.