

1 **Space-Efficient Euler Partition**
2 **and Bipartite Edge Coloring**

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6 **Abstract.** We describe space-efficient algorithms for two problems on
7 undirected multigraphs: Euler partition (partitioning the edges into a
8 minimum number of trails); and bipartite edge coloring (edge-coloring
9 a bipartite multigraph with the minimum number of colors). For Euler
10 partition we reduce the amount of working memory needed by a loga-
11 rithmic factor while preserving a linear running time. For bipartite edge
12 coloring we achieve a running time of $O(n + m\Delta)$ with $O(n + m)$ bits of
13 working memory, where n , m and Δ are the numbers of vertices and of
14 edges and the maximum degree, respectively, of the input multigraph.

15 **Keywords:** graph algorithms, Euler partition, bipartite edge coloring