1067-90-998   **David Hartvigsen*** (`Hartvigsen.1@nd.edu`), Mendoza College of Business, University of Notre Dame, Notre Dame, IN 46556-5646, and **Yanjun Li** (`Li14@purdue.edu`), Krannert School of Management, Purdue University, West Lafayette, IN 47907. *Polyhedral and Algorithmic Results for 1-restricted Simple 2-matchings.*

A simple 2-matching in a graph is a subgraph all of whose nodes have degree 1 or 2. A simple 2-matching is called k-restricted if every connected component has $> k$ edges. These problems are related to the travelling salesman problem. We present a polynomial-time algorithm for finding maximum cardinality 1-restricted simple 2-matchings. We also consider the general weighted problem for 1-restricted simple 2-matchings for which we present a class of facets. For a special class of graphs, we show that these facets are sufficient to describe the polytope and can be used in a polynomial-time primal-dual algorithm. (Received September 17, 2010)