1046-Z1-776 **Michael J. Adams*** (mjadams@truman.edu), Dept. of Mathematics and Computer Science, Truman State University, Kirksville, MO 63501, and **Jonathan D. Vollmer**. *Loop Decompositions of Circulations in Strongly Connected Digraphs.* Preliminary report.

We address the problem of partitioning a nonnegative circulation in a strongly connected digraph over a set of elementary directed cycles: in mathematical ecology, such a partition is called a loop decomposition. We show that the set of loop decompositions can be put into one-to-one correspondence with the set of points belonging to the feasible set of a linear programming problem that allows us to minimize linear functions of the flows in any given set of directed cycles. We also describe a recursive algorithm developed for listing all directed cycles in a digraph. These results generalize the method of demographic loop analysis used in mathematical ecology. (Received September 15, 2008)