1123-58-66 **Luen-Chau Li*** (luenli@math.psu.edu), Department of Mathematics, Pennsylvania State University, University Park, PA 16802, and **Zhaohu Nie**. *On the Liouville integrability of the periodic Kostant-Toda flow on matrix loops of level k.*

In this work, we consider the periodic Kostant-Toda flow on matrix loops of level k, which correspond to periodic infinite band matrices with period n with lower bandwidth equal to k and fixed upper bandwidth equal to 1 with 1's on the first superdiagonal. We show that the coadjoint orbits through such matrix loops can be identified with those of a finite dimensional Lie group which appears in the form of a semi-direct product. We then characterize the generic coadjoint orbits and obtain an explicit global cross-section for such orbits. Finally we establish the Liouville integrability of the periodic Kostant-Toda flow on such orbits via the construction of action-angle variables. (Received August 15, 2016)