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Melvin Leok* (mleok@math.ucsd.edu) and **Xuefeng Shen**. *Geometric Exponential Integrators for Semi-Discretized Hamiltonian PDEs*.

We consider exponential integrators for semilinear Poisson systems. Two types of exponential integrators are constructed, one preserves the Poisson structure, and the other preserves energy. Numerical experiments for semilinear Poisson systems obtained by semi-discretizing Hamiltonian PDEs are presented. These geometric exponential integrators exhibit better long time stability properties as compared to non-geometric integrators, and are computationally more efficient than traditional symplectic integrators and energy-preserving methods based on the discrete gradient method. (Received January 29, 2019)