Collective symplectic integrators on $S_2^n \times T^*\mathbb{R}^m$

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Symplectic integrators for the numerical treatment of Hamiltonian mechanics are a cornerstone of geometric numerical integration. For non-flat geometries, the standard methods do not apply. In some cases *Collective symplectic integrators* apply. In this talk we study such integrators for a symplectic space $S_2^n \times T^*\mathbb{R}^m$. This space arises in an atomistic model of magnetic materials, the spin-lattice-electron model.