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Monodromy of a Completely Integrable System

Topological monodromy of integrable systems, as introduced by Duistermaat in 1980, is the first of three interesting obstructions to the existence of global action-angle coordinates. This obstruction has since been observed in many physical systems, so it comes as a bit of a shock that such a rough topological invariant was discovered so recently in the development of classical mechanics.

More recently, there have been attempts to make connections between topological monodromy in classical mechanics, and quantum phenomena, specifically in energy levels of particles and molecules (see work by Vu Ngoc, Sadovskii and others). In this talk I will give a brief introduction to topological monodromy of integrable systems, and present a completely integrable system on $S^2 \times S^2 \times S^2$ which has non-trivial topological monodromy, as well as some relation to recent research in quantum physics (see the preprint arXiv:1411.7063).