

NON-PERIODIC TWIST MAPS

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1. Twist dynamics, exact symplectic maps and Hamiltonian systems.
2. The variational approach: generating functions and the action functional.
3. Generalized standard maps. Aubry-Mather orbits.
4. Non-autonomous impact problems. The Fermi-Ulam ping-pong model.

REFERENCES

- [1] D. Dolgopyat, *Fermi Acceleration in Geometric and Probabilistic Structures in Dynamics*, K. Burns, D. Dolgopyat and Y. Pesin Eds. AMS Providence, Rhode Island 2008, 149–166.
- [2] M. Kunze and R. Ortega, *Complete Orbits for Twist maps on the Plane*, *Ergodic Theory, Dynam. Systems* **28** (2008), 1197–1213.
- [3] J. Moser, *Selected Chapters in the Calculus of Variations*, Birkhäuser, Basel-Boston (2003).
- [4] J. Moser and E. Zehnder, *Notes on Dynamical Systems*, AMS Providence, Rhode Island 2005.
- [5] V. Zharnitsky, *Instability in Fermi-Ulam ping-pong problem*, *Nonlinearity* **11** (1998), 1481–1487.