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Probability current loops in non-equilibrium steady states and statistical properties of angular momenta in configuration space[1] R.K.P. ZIA, Physics Dept, Virginia Tech, Blacksburg, VA, BAYLOR FOX-KEMPER, Department of Geological Sciences, Brown University, Providence, RI, DIBYENDU MANDAL, JEFFREY WEISS, Department of Atmospheric and Oceanic Sciences, University of Colorado, Boulder, CO — Unlike systems in thermal equilibrium, steady probability current loops persist in non-equilibrium stationary states. One of the consequences is that, in the space of two or more observable quantities (q_i), the average "angular momentum" ($\langle L_{ij} \rangle \equiv \langle q_i \times \dot{q}_j \rangle$) is typically non-trivial. In addition, the full distribution of L often display remarkable properties. We will provide a general framework for the study of L, as well as specific examples – in the context of both exactly solvable models (based on linear Langevin equations with additive white noise) and physical data of global ocean heat content.

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