Basin entropy and the escape choice in an area-preserving map

P. Haerter[1], R. L. Viana[1], M. A. F. Sanjuán[3]

[1] Universidade Federal do Paraná,
[2] Universidad Rey Juan Carlos

Basins of attraction constitute a fundamental part of studying dynamical systems, although they only appear naturally in dissipative systems. For conservative systems, accessing the basins of attraction requires the system to be open, and how the exits are chosen can directly influence the outcome of the results. This study explores the impact on the escape basins for different choices for opening the system by using a model of particles transported by field lines in tokamaks with reversed shear. These phenomena are quantitatively evaluated using the concept of basin entropy across various system openings. Our findings reveal that the positioning of the exits influences the complexity and behavior of the escape basins, with remarkable abrupt changes in the basin entropy linked to the choice of the exits. [1, 2, 3]

References

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