

Abstract Submitted
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Mixing in the spiral roll state in heat convection between concentric double spherical boundaries¹ TOMOAKI ITANO, Kansai Univ., TAKAHIRO NINOMIYA, CKD Corporation, KOHEI IIDA, MASAKO SUGIHARA-SEKI, Kansai Univ. — Recent studies have indicated that the spherical Rayleigh Bénard convection provides a variety of non-trivial (convective) flow states bifurcating from the (conductive) static state at the onset of instability. In the present study, focusing on one of them, "spiral roll state", which was originally explored by Zhang et al.(2002), we elucidated the following three points of the state; (1) the state exists even in a fairly thicker gap than expected in the previous study, and (2) it is an exact autonomously rotating wave solution, and (3) the state bifurcates directly from the static state at the onset of instability. It is of great interest that this state involves globally mixing through the whole domain beyond a cell which would be formed by the other highly-symmetric nontrivial steady states bifurcating at the onset.

¹ORDIST of Kansai Univ., KAKENHI(23760164)

Tomoaki Itano
Kansai Univ.

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