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Self-assembly and novel planetary motion of ferrofluid drops in a rotational magnetic field[1] CHING-YAO CHEN, HAO-CHUNG HSUEH, National Chiao Tung University, Taiwan — We experimentally investigate the motion of ferrodrops in a rotating magnetic field. Magnetized and driven by the external field, the ferrodrops are stretched and self-align to form a drop array along the field orientation. An interesting planet-like dual rotation, including local self-spins of individual drops and a global revolution of the drop array, is newly identified. While the drops spin nearly synchronized with the external field, the revolution always lags behind the field and appears a forth and back movement. Prominence of the net revolutionary movement depends on the strength and uniformity of the overall field as well as the number of drops containing in the array. In general, more uniform and stronger rotating field lead to a more prominent global revolution. Phenomenon of such planetary motion can be applied to mix two fluids more effectively than self-spin drops.

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