

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Emergent roller vortex in soft harmonic gravitational confinement. frequency is 40 Hz, field amplitude is 6mT.

File Name: Supplementary Movie 2

Description: Roller vortex. Slow motion (Playback is a half of the real time). Soft harmonic gravitational confinement.

File Name: Supplementary Movie 3

Description: Roller vortex at a flat surface. 42Hz, 7mT.

File Name: Supplementary Movie 4

Description: Spontaneous chirality switching event for the roller vortex selfassembled at 40Hz, 6 mT field.

File Name: Supplementary Movie 5

Description: Rollers at a flat surface in air. 42Hz, 7mT.

File Name: Supplementary Movie 6

Description: Bead trapping and transport by a roller vortex at a flat surface. 42Hz, 7mT.