Contribution ID: **25** Type: **Invited talk**

Observation of stationary turbulence in spinor Bose-Einstein condensates

Tuesday 3 September 2024 11:20 (40 minutes)

Spinor Bose-Einstein condensates (BECs) of atomic gases represent a quantum fluid characterized by multiple symmetry breaking, providing an interesting platform for the exploration of quantum turbulence. In this talk, I will report our observation of a stationary turbulent state in a spin-1 atomic BEC driven by a radio-frequency magnetic field. The magnetic driving injects energy into the system through spin rotation, leading to the emergence of an irregular spin texture in the condensate. As the driving persists, the spinor condensate evolves into a nonequilibrium steady state marked by distinctive spin turbulence. Remarkably, under specific driving conditions, the turbulence attains its maximum intensity, accompanied by an isotropic spin composition. Through numerical simulations and experimental validation, we find that the turbulence in the BEC is sustained by a mechanism rooted in the chaotic nature of internal spin dynamics induced by the magnetic driving.

References

Short bio (50 words) or link to website

https://qgl.snu.ac.kr/

Relevant publications (optional)

Career stage

Professor

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Track Classification: FINESS