



Contribution ID: 50

Type: **Oral Presentation**

## **Basis-independent coherence in avian-inspired quantum magnetic sensing**

*Monday, 22 March 2021 10:40 (20 minutes)*

Fundamentally, molecular biological systems are quantum mechanical. Some of the big questions then is whether or not quantum effects manifest and whether these quantum effects contribute to the function of the biological systems. Studies have shown that migratory birds can orientate using the Earth's magnetic field, and there is growing traction that this ability requires some measure of non-trivial quantum effects. Here, we examine an avian-inspired magnetic sensor model based on the radical pair mechanism, combined with a collisional model of its environment. By using basis-independent quantum coherence, we are able reveal the relationship between quantum effects in the sensor with its magnetosensing performance.

**Primary author:** Dr LE, Thao P. (University of Nottingham)

**Presenter:** Dr LE, Thao P. (University of Nottingham)

**Session Classification:** Quantum biology

**Track Classification:** Quantum biology