



# Innsbruck Physics Colloquium

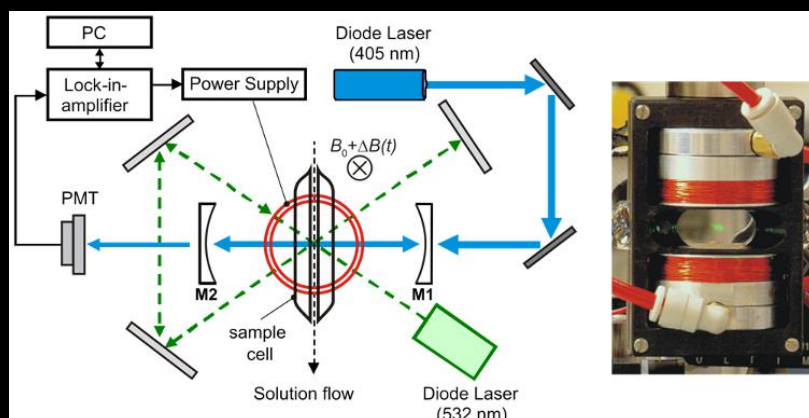
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## Photophysics and photochemistry in cryptochromes blue-light receptor proteins: The chemical physics of animal magnetoreception

The fact that many animals, including migratory birds, use the Earth's magnetic field for orientation and compass-navigation is fascinating and puzzling in equal measure. The physical origin of these phenomena has not yet been fully understood, but arguably the most likely hypothesis is based on the radical pair mechanism (RPM). Whilst the theoretical framework of the RPM is well-established, most experimental investigations have been conducted at fields several orders of magnitude stronger than the Earth's. Here we use transient absorption spectroscopy to demonstrate a pronounced orientation-dependence of the magnetic field response of a molecular triad system in the field region relevant to avian magnetoreception. The chemical compass response exhibits the properties of an inclination compass as found in migratory birds. The results underline the feasibility of a radical pair based avian compass and also provide further guidelines for the design and operation of exploitable chemical compass systems [1].

[1] C. Kerpel et al., Nat. Commun. 10, 3707 (2019)



**Tuesday, 5.11.2019, at 17:15 h in lecture hall C**