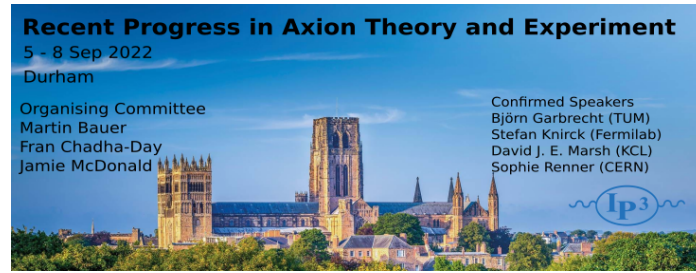


## Recent Progress in Axion Theory and Experiment



Contribution ID: 3

Type: **not specified**

### **Matched-Filters applied to radio pulsar data to search for signal from resonant axion-photon conversion**

The axion is one of the well-motivated dark matter candidates in the literature today. Recently, a lot of work has gone into understanding the signal from the resonant conversion axions to photons in neutron star magnetospheres. The state-of-the-art ray-tracing simulations show that the spectral line signal is not only Doppler-broadened but also has significant non-trivial time-dependence. I will describe how one can search for the signal in time-domain radio pulsar data using matched-filters optimised to search for signal shapes predicted by simulations. I will discuss how one can derive constraints on the axion-photon coupling using this technique as well as discuss strategies to maximise the signal such as targeting specific pulsars. With improved modelling of the signal and larger, more sophisticated radio telescopes, I will highlight the untapped potential in this domain.

#### **Title**

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