

# Master2 Internship proposal at CPT

**Research team:**

Particle Theory

**Supervisor:**

Aoife Bharucha

**e-mail:**

aoife.bharucha@cpt.univ-mrs.fr

**Project title:**

Radiative leptonic D decays

**Description:**

B and D meson decays are the focus of the LHCb experiment at CERN, and are important indirect probes of physics beyond the Standard Model. In order to increase the sensitivity of these modes, the hadronic structure must be well understood. Radiative leptonic decays and decays to four leptons are a sensitive way to probe this hadronic structure. The aim of the 4-month internship is to adapt existing calculations for B decays to the case of the D meson, which has so far never been done. This would naturally lead to a PhD thesis.

**References:**

- Radiative leptonic decay  $B \rightarrow \gamma l \nu_l$  with subleading power corrections, M. Beneke, V. M. Braun, Y. Ji and Y. B. Wei, JHEP **07** (2018), 154 [arXiv:1804.04962 [hep-ph]].
- B meson distribution amplitude from  $B \rightarrow \gamma l \nu$ , M. Beneke and J. Rohrwild, Eur. Phys. J. C **71** (2011), 1818 [arXiv:1110.3228 [hep-ph]].