

## Making and breaking the Standard Model with rare B decays

*Dr. Flavio Archilli*

*Physikalisches Institut, Heidelberg*

The standard model (SM) of particle physics is our best description of fundamental particles and their interactions, but it is known to be incomplete.

The most basic aspects of nature like the dominance of the matter over the anti-matter or the mass hierarchy of the elementary particles have yet to be explained.

Flavour changing neutral current decays of beauty mesons and hadrons represent extremely sensitive probes to detect physics beyond the SM.

These decays are forbidden at tree level and therefore strongly suppressed in the SM making them sensitive to small contributions from new mediators.

For example,  $B(s) \rightarrow \ell\ell$  and  $b \rightarrow (s,d)\ell\ell$  processes give access to many observables where effects of New Physics can be observed.

The talk will give an overview of some recent results obtained with the LHCb detector, which have revealed potential cracks in the SM.