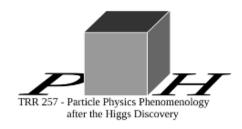
## Young Scientists Meeting of the CRC TRR 257



Contribution ID: 19 Type: talk

## The heavy meson lifetimes

Thursday, June 9, 2022 4:00 PM (30 minutes)

(Part of the CRC project C1b)

In this talk, I plan to discuss the current status of theory predictions for lifetimes of heavy H=B,D-mesons (containing a heavy quark Q=b,c), which can be presented schematically within the Heavy Quark Expansion (HQE) framework as:

 $\Gamma(H) = \Gamma_3 + \Gamma_5 \frac{\langle calO_5 \rangle}{m_Q^2} + \Gamma_6 \frac{\langle calO_6 \rangle}{m_Q^3} + \ldots + 16\pi^2 \left[ \tilde{\Gamma}_6 \frac{\langle \tilde{O}_6 \rangle}{m_Q^3} + \tilde{\Gamma}_7 \frac{\langle \tilde{O}_7 \rangle}{m_Q^4} + \ldots \right], where$  cal  $O_d$  denotes the effective operator of dimension d, with the matrix element  $\langle calO_d \rangle \equiv \langle H | calO_d | H \rangle$ ,

cal  $O_d$  denotes the effective operator of dimension d, with the matrix element  $\langle calO_d \rangle \equiv \langle H|calO_d|H \rangle$ , and  $\Gamma_d$  is the corresponding short-distance Wilson coefficient. Then I will discuss more in detail the recent first determination of Darwin operator contribution  $\Gamma_6$ . In addition, I will present some results on the phenomenology, and will discuss further prospects and plans on improvement of the HQE predictions for these lifetimes - both from perturvative and non-perturbative side - by the Siegen and Karlsruhe Universities.

**Author:** RUSOV, Aleksey (University of Siegen)

**Presenter:** RUSOV, Aleksey (University of Siegen) **Session Classification:** Young scientists talks