



# EINLADUNG

im Rahmen des Teilchenphysikseminars

zum Vortrag von

**Bernat CAPDEVILA**

(University of Cambridge, University of Barcelona)

über

***“Inclusive semileptonic B-meson decays and CKM matrix determinations: challenges and theoretical framework(s)“***

**Abstract:**

The CKM matrix is a key ingredient in the study of CP violation and in New Physics searches within the flavour sector. Therefore, precise determinations of its matrix elements are of utmost importance.  $|V_{ub}|$  and  $|V_{cb}|$  can be extracted from both exclusive semileptonic  $b \rightarrow u$  and  $b \rightarrow c$  decays and the inclusive channels  $B \rightarrow Xu \ell \nu$  and  $B \rightarrow Xc \ell \nu$ . Exclusive and inclusive determinations of these matrix elements have been in tension for a long time, with even different theoretical frameworks not agreeing well with one another. In this seminar, I am going to review some of the techniques employed in the study of inclusive semileptonic B-meson decays and present the results of our latest inclusive determination of  $|V_{cb}|$ . Then, I will discuss the challenges one needs to face in order to obtain a solid description for  $B \rightarrow Xu \ell \nu$  and some of the solutions proposed. Finally, I will present the first calculation of power-suppressed perturbative corrections in  $B \rightarrow Xu \ell \nu$  and show the first preliminary results of our determination of the necessary non-perturbative functions within a neural network approach.

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**Zeit: Dienstag, 23.4.2024, 16:15h**

**Ort: Erwin-Schrödinger-Hörsaal, Boltzmannngasse 5, 5. Stock**

Join Zoom Meeting - Meeting ID: 933 4269 3866 Passcode: 185096  
<https://univienne.zoom.us/j/93342693866?pwd=aUpTR0VJNUhJY2Q0ajdaKzI1YWVBR09>

gez.: A. Hoang, M. Procura