

# Near-threshold narrow resonances in $^{11}\text{B}$ : a complex open quantum system.

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The large branching ratio observed in the  $\beta$ -delayed proton emission of  $^{11}\text{Be}$  was explained with the existence of a narrow near-threshold proton emitting resonance in  $^{11}\text{B}$ . The direct measurement of this process raised a heated debate around the properties of this resonance and the unusually large  $\beta$ -decay branching ratio populating it. Since then, there were several experiments that reported the observation of such an elusive resonance. While there is a widespread agreement on the existence of this resonance, from both, theoretical and experimental stand points, there are still many open questions around its nature. One of the main challenges lies in the description of the complex structure of  $^{11}\text{B}$  and the role of the continuum coupling with four different particle emission thresholds in about 2 MeV of excitation energy. Moreover, the properties of the states in the vicinity of these thresholds, critical to understand the structure of  $^{11}\text{B}$ , are either missing or poorly constrained. In this talk, I will present an overview of the efforts devoted to understanding the complex  $^{11}\text{B}$  structure and its open quantum system nature. In particular, I will discuss a recent  $^{10}\text{B}(d,p)$  experiment to investigate the  $^{11}\text{B}$  structure at high excitation energy using the HELIOS spectrometer.