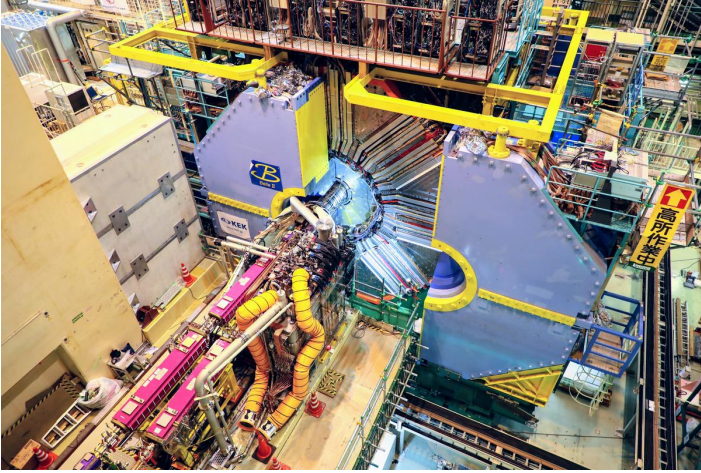


EVENTS OF RARE BEAUTY OBSERVED FOR THE FIRST TIME BY BELLE II



The Belle II experiment at the KEK laboratory in Japan, where a large international collaboration works (including INFN as one of the main members), has obtained the first evidence of a particularly elusive decay of the charged B meson, a particle composed of a quark beauty and an antiquark. First presented last July at the conference of the European Physical Society in Hamburg, and recently in a dedicated seminar at CERN, the study has now been [published on arxiv](#) and sent to the Physical Review D. It is a very Italian result since the data analysis was conducted

by an Italian group of the INFN Perugia Division, in collaboration with German groups of the KIT and DESY laboratories, French groups from CNRS in Strasbourg, and with KEK. Detecting this decay was a difficult undertaking, which required the Belle II scientific collaboration to overcome tough technological and scientific challenges. However, in addition to the important result of the first evidence of a rare event, there is also something that surprised the researchers. The frequency with which the decay was observed is higher than expected. Thus, it will be necessary to continue studying the process when more data are available, as early as the first months of 2024, with the restarting of the SuperKEKB accelerator activities. The accelerator has had a 1.5-year shutdown during which many technological improvements were made, both to the accelerator and to the Belle II detector.