



# Physics Seminar: A Window to New Physics: Rare B-Meson Decays and Flavor-Changing Neutral Currents

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**Huggins Science Hall 206 (HSH 206)**

Scientists study subatomic particles to understand the universe, and one of the most mysterious is the B-meson, a short-lived particle made of a bottom quark and another quark. Some of its decays are extremely rare and occur through a special process called Flavor-Changing Neutral Currents (FCNCs). These decays are highly suppressed in the Standard Model, making them a powerful tool to search for new particles beyond the Standard Model (what we currently know).

In this talk, we will explore a few fascinating questions. What are rare B-meson decays? How do Physicists use rare decays to look for New Physics beyond the Standard Model? How do FCNCs make rare decays special and sensitive to new physics? What are like Vector-Like Quarks, and how could they modify these decays? What are experiments like LHCb and Belle telling us about these rare decays?

Maryam Bibi is currently a lab instructor at St. Francis Xavier University. She completed her PhD at Memorial University of Newfoundland.