



# Old Dominion University Department of Physics

## Colloquium

**Tuesday, September 12, 2017**

"Hints for physics beyond the Standard Model in decays of beauty quarks"

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**Abstract:** Particle physics seeks to understand the laws governing the universe at the most fundamental level. There are indications that our current best formulation of these laws, the Standard Model, is still incomplete. A promising way of searching for physics beyond the Standard Model with particle collider experiments is the precision study of processes in which quarks change from one flavor to another. Such processes may receive observable quantum corrections from new elementary particles that so far have escaped direct detection. Recent measurements of decays of B mesons, in which a heavy beauty quark changes to a lighter flavor of quark, have revealed tantalizing deviations from Standard-Model predictions, but the interpretation is still unclear. Complementary information on the same underlying quark transitions can be obtained by studying decays of  $\Lambda_b$  baryons instead of B mesons. To interpret the experimental data, the contributions of the strong interaction need to be calculated numerically using lattice quantum chromodynamics on supercomputers.

Presentation: **OCNPS 200 @ 3:00 pm**  
Refreshments: **OCNPS Atrium @ 2:30 pm**

**All interested persons are cordially invited to attend.**