



University  
of Victoria

Graduate Studies

Notice of the Final Oral Examination  
for the Degree of Doctor of Philosophy

of

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MSc (Kyungpook National University, 2004)

**“Search for the Lepton Flavour Violating Decay in  $Y(3S) \rightarrow e_{\pm} \mu \tau$ ”**

Department of Physics and Astronomy

August 30, 2017

10:00 A.M.

Clearihue Building

Room B017

Supervisory Committee:

Dr. J. Michael Roney, Department of Physics and Astronomy, University of Victoria (Supervisor)

Dr. Robert Kowalewski, Department of Physics and Astronomy, UVic (Member)

Dr. Alexandre Brolo, Department of Chemistry, UVic (Outside Member)

External Examiner:

Dr. Garth Huber, Department of Physics, University of Regina

Chair of Oral Examination:

Dr. David McCutcheon, Peter B. Gustavson School of Business, UVic

## Abstract

Charged lepton flavour violating processes are unobservable in the standard model (SM), but they are predicted to be enhanced in several new physics extensions. Data collected with the BaBar detector at the SLAC PEP-II  $e^+e^-$  collider at a center-of-mass energy of 10.36 GeV were used to search for electron-muon flavour violation in  $Y(3S) \rightarrow e^\pm \mu^\mp$  decays. The search was conducted using a data sample in which 118 million  $Y(3S)$  mesons were produced, corresponding to an integrated luminosity of 27 fb $^{-1}$ .