



University  
of Windsor

Department of Mathematics & Statistics

# Colloquium

**“Extreme Arens Irregularities of Algebras in Harmonic Analysis”**

<b>Who:</b>	<b>Dr. M. Filali</b> <b>Department of Mathematical Sciences</b> <b>University of Oulu, Finland</b>
<b>When:</b>	<b>Tuesday May 21, 2019</b> <b>3:00 p.m.</b>
<b>Where:</b>	<b>Room 9-118, Lambton Tower</b> <b>(Father Faught Conference Room)</b>

## Abstract:

Arens irregularity of a Banach algebra is due to elements in its Banach dual which are not weakly almost periodic. Unlike  $C^*$ -algebras, the usual algebras in harmonic analysis, such as the group algebra or the Fourier algebra when known, turned out to be all Arens irregular (even in an extreme way). At the very beginning, about seventy years ago, Richard Arens himself proved that  $\ell^1$  is not regular, then Mahlon Day proved few years later the same result for many discrete groups including the abelian ones. Since then, a long exciting story followed; some of it is already told by various authors in a couple surveys, books and memoirs.

In the present talk, we attempt to trace this story again, but this time we try to explain the combinatorial reason (on the group or its dual object) causing such (extreme) irregularity. There are two different types of extreme Arens irregularities, arising naturally from the way the algebras are decided to be Arens irregular.

The talk is based partly on some recent joint work with Jorge Galindo.

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Refreshments to follow in the 10th floor, Room 10-118 Lambton Tower