

# Lethbridge Number Theory and Combinatorics Seminar

Monday — October 5, 2015

Room: **C630**

Time: **12:00 to 12:50 p.m.**

## Alexey Popov

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## Every operator has almost-invariant subspaces

*Abstract:* It is a classical open problem in Operator Theory whether every bounded linear operator  $T$  on a Hilbert space  $H$  has a non-trivial invariant subspace (that is, a subspace  $Y$  of  $H$  such that  $TY$  is contained in  $Y$ ; nontrivial means not  $\{0\}$  and not  $H$ ). This is called the Invariant Subspace Problem; it is almost 100 years old.

In this talk we will show that any bounded operator on an infinite-dimensional Hilbert space admits a rank one perturbation which has an invariant subspace of infinite dimension and co-dimension. Moreover, the norm of the perturbation can be chosen as small as needed.

This is a joint work with Adi Teaciacu.

**EVERYONE IS WELCOME!**

Visit the seminar web page at <http://www.cs.uleth.ca/~nathanng/ntcoseminar/>



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