

We will continue online on Thursday, **November 12th, at 1pm on [ZOOM](#) platform** (for information how to access seminar and next programme visit

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) by the talk:

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### **Model-theoretic stability and superstability in classes of modules**

Abstract:

Dividing lines in complete first-order theories were introduced by Shelah in the early seventies. A dividing line is a property such that the classes satisfying such a property have some nice behaviour while those not satisfying it have a bad one. Two of the best understood dividing lines are those of stability and superstability.

In this talk, I will study the notion of stability and superstability in abstract elementary classes of modules with respect to pure embeddings, i.e., classes of the form  $(K, \leq_p)$  where  $K$  is a class of  $R$ -modules for a fixed ring  $R$  and  $\leq_p$  is the pure submodule relation. In particular, using that the class of  $p$ -groups with pure embeddings is a stable AEC, I will present a solution to Problem 5.1 in page 181 of *Abelian Groups* by Laszlo Fuchs. Moreover, I will show how the notion of superstability can be used to give new characterizations of noetherian rings, pure-semisimple rings, and perfect rings.