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CATEGORY THEORY RESEARCH SEMINAR:

Adjoint split extensions and 2-dimensional protomodularity

Dr Graham Manuell (Stellenbosch University)

DATE: Tuesday, 23 April 2024 | 12h10 – 13h00 SAST

VENUES:
- Room 3013, Jan Mouton Building, Stellenbosch University
- Online

ABSTRACT

Semidirect products of groups provide a way to build up larger groups from smaller ones, and similar constructions also appear in other protomodular categories. There are a number of constructions involving categories that behave similarly to semidirect products. These include Artin glueings of frames or toposes, and the decomposition of the category of cocommutative Hopf algebras (over a field of characteristic zero) into the categories of Lie algebras and groups. These form what we call "adjoint split extensions of categories". In the 1-categorical setting, the good case is when the kernel and the splitting are jointly extremally epic; in the 2-dimensional setting, we instead ask that right adjoints of the kernel and the splitting be jointly conservative. If we restrict our consideration to regular, pointed protomodular categories, we find that every adjoint extension is 'good' in this sense, and hence the 2-category of regular, pointed protomodular categories exhibits a 2-dimensional analogue of protomodularity. A similar (but dual) result holds for toposes. This talk is based on joint work with Nelson Martins-Ferreira and Ülo Reimaa.

BIOGRAPHY

Graham Manuell is a lecturer at Stellenbosch University. His research interests include pointfree topology, category theory, constructive mathematics and semigroup theory.

WHO SHOULD ATTEND?

All are welcome. It will be assumed that the audience is familiar with basic concepts of category theory.

REGISTER TO ATTEND

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