Contramodules and their applications to tilting theory and Enochs’ conjecture

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Timetable: 16 hrs. First lecture on November 21, 2019, 11:00 (dates already fixed, see calendar), Torre Archimede, Room 2BC/30.

Course requirements: knowledge of basic concepts of category theory and homological algebra, such as abelian categories and their derived categories, will be largely presumed.

Examination and grading:

SSD:

Aim:

Course contents:

Contramodules are module-like algebraic structures with infinite summation operations subject to natural axioms. For any infinitely generated n-tilting (or infinity-tilting) module, the heart of the related tilting t-structure is the category of contramodules over the topological ring of endomorphisms of the tilting module. The course will start with a discussion of comodules and contramodules over coalgebras and proceed to the tilting-cotilting correspondence, contramodules over topological rings, topologically semisimple and topologically perfect topological rings, and a discussion of the contramodule-based approach to the Enochs conjecture about covers and direct limits in module categories.