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Alina N. Duca* (anduca@ncsu.edu), North Carolina State University, Department of Mathematics, Box 8205, Raleigh, NC 27695-8205. *Injective modules over a principal left and right ideal domain.*

Over a noetherian ring R every injective module is a direct sum of indecomposable injective modules. Such objects have been classified as either "tame" or "wild". The tame ones are uniquely determined by the prime ideals of the ring and are now relatively well understood. Much less is known about wild injectives, and so far there are no known descriptions of wild injectives over noetherian rings. In particular, the modern methods of ring and module theory from the second half of the century, which drove massive advances in the field, have not proved effective in analyzing wild injectives.

In this talk, we will discuss the injective modules over a principal left and right ideal domain, which is a noetherian ring. Motivated by a classic treatment of O.Ore (1930's), I take advantage of the factorization theory in R and investigate the internal structure of an indecomposable injective. More specifically, it is described as a "layered" structure in two ways: first as the union of its socle series, and secondly, as the union of its elementary socle series, a concept from model theory introduced by Herzog in 1993 as the elementary analogue of the socle series of a module. (Received February 06, 2009)