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ω_1 -generated uniserial modules over chain rings

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Abstract: The purpose of this paper is to provide a criterion of an occurrence of uncountably generated uniserial modules over chain rings. As we show it suffices to investigate two extreme cases, nearly simple chain rings, i.e. chain rings containing only three two-sided ideals, and chain rings with “many” two-sided ideals. We prove that there exists an ω_1 -generated uniserial module over every non-artinian nearly simple chain ring and over chain rings containing an uncountable strictly increasing (resp. decreasing) chain of right (resp. two-sided) ideals. As a consequence we describe right steady serial rings.

Keywords: chain rings, serial rings, uniserial modules

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