E1-33: Uniform modules over serial rings

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Let R be a serial ring. The structure theory of modules over R has been an area that generated a large amount of interest during recent years. For any indecomposable idempotent e, eR is a uniserial module, but a uniform right R-module need not be uniserial. However, a nonsingular uniform R-module is uniserial. So it is of interest to find some sufficient conditions on a uniform

R-module need not be uniserial. However, a nonsingular uniform R-module is uniserial. So it is of interest to find some sufficient conditions on a uniform module M_R under which it becomes uniserial. Wright discussed this question for modules over R having Krull dimension. Muller & Singh had generalized the results of Wright, to modules over arbitrary serial rings, by showing that $ann_{m'}(\bigcap_{n \in N} T^n)$ is uniserial.

(Here T is the intersection of the clique of an associated Goldie prime ideal P). This is the best in this generality. We were able to give a new proof of this via localization at T. It is of great interest to describe $(\bigcap_{n \in N} T^n)$ in terms of P.

Here we prove that $(\bigcap_{n \in N} T^n)$ contains all the prime ideals which are properly contained in P. Hence if the clique of P is of length more than one, all the prime ideals properly contained in P form a chain and has a maximal prime for the case, $(\bigcap_{(n \in N)} T^n)$ Goldie prime.