On uniformly 1-absorbing primary ideals

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Abstract. In this article, we introduce the concept of uniformly 1-absorbing primary ideal which is a generalization of uniformly primary ideal. Let R be a commutative ring with a unity and P be a proper ideal of R. P is said to be a uniformly 1-absorbing primary ideal if there exists $N \in \mathbb{N}$ and whenever $xyz \in P$ for some nonunits $x, y, z \in R$, then either $xy \in P$ or $z^N \in P$. The smallest aforementioned $N \in \mathbb{N}$ is called the order of P and denoted by $\mathrm{ord}_R(P) = N$. In addition to giving many properties of uniformly 1-absorbing primary ideals, we investigate the relationship between uniformly 1-absorbing primary ideals and other classical ideals such as uniformly primary ideals and 1-absorbing primary ideals.

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