THE TOTAL SPECTRUM OF A MODULE

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Abstract

Let R be a commutative ring. A proper submodule M of an R-module N is said to be prime if the condition $an \in M$ implies either $a \in (M : N)$ or $n \in M$. Then it is natural to define the Spectrum of a module N,denoted by $SpecN$, to be the set of its prime submodules. Howewer, given a map $f : N \to N'$ of R-modules may not induce a map $f^* : SpecN' \to SpecN$ between the corresponding spectra since there exists prime submodules $M' \subset N'$ for which $f^{-1}(M')$ is not a prime submodule of N. In order to solve this problem we introduce the notion of total spectrum of a module N, denoted $TSpecN$, and we define on it a suitable topology so that the induced map between the spectra be continuous.