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associated prime

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Let R be a ring, and let M be an R -module. A prime ideal P of R is an \mathfrak{f} for M if $P = \text{ann}(X)$, the annihilator of some nonzero submodule X of M .

Note that if this is the case, then the module $\text{ann}_M(P)$ contains X , has P as its annihilator, and is a <http://planetmath.org/FaithfulModule> faithful (R/P) -module.

If, in addition, P is equal to the annihilator of a submodule of M that is a <http://planetmath.org/FaithfulModule> fully faithful (R/P) -module, then we call P an \mathfrak{f} of M .