

# Torsion Theory and Gabriel Topologies

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## Abstract

Given two classes  $\mathcal{T}$  and  $\mathcal{F}$  of  $A$ -modules for some ring  $A$ , we can define a *torsion theory*  $(\mathcal{T}, \mathcal{F})$  for the category of  $A$ -modules. In particular,  $(\mathcal{T}, \mathcal{F})$  is called *hereditary* if  $\mathcal{T}$  is closed under submodules. The aim of this seminary is to show that there is a bijective correspondence between hereditary torsion theories and particular linear topologies on the ring  $A$ , called *Gabriel topologies*. Finally, we will give some examples of Gabriel topologies.

## References

- [1] Bo Stenström, *Rings of Quotients: An Introduction to Methods of Ring Theory*. Springer-Verlag Berlin Heidelberg, New York, 1975.