The Extension Dimension of Abelian Categories
Zhaoyong Huang
Nanjing University
Email: huangzy@nju.edu.cn

Let \( \mathcal{A} \) be an abelian category having enough projective objects and enough injective objects. We prove that if \( \mathcal{A} \) admits an additive generating object, then the extension dimension and the weak resolution dimension of \( \mathcal{A} \) are identical, and they are at most the representation dimension of \( \mathcal{A} \) minus two. By using it, for a right Morita ring \( \Lambda \), we establish the relation between the extension dimension of the category \( \text{mod} \Lambda \) of finitely generated right \( \Lambda \)-modules and the representation dimension as well as the global dimension of \( \Lambda \). In particular, we give an upper bound for the extension dimension of \( \text{mod} \Lambda \) in terms of the projective dimension of certain class of simple right \( \Lambda \)-modules and the radical layer length of \( \Lambda \). It is a joint work with Junling Zheng and Xin Ma.

REFERENCES

2010 Mathematics Subject Classification. 18G20, 16E10, 18E10.