

QUILLEN EQUIVALENCES BETWEEN GORENSTEIN MODEL CATEGORIES

GEORGIOS DALEZIOS

Abstract. One of the initial aims of model category theory, initiated by Quillen in the 60's, was to formalize certain constructions occurring in homological algebra, such as derived functors. More recently, after the work of M. Hovey and J. Gillespie, model structures on exact categories have found an important application in relative homological algebra: they correspond bijectively to certain complete cotorsion pairs. In this talk, we provide Quillen equivalences between appropriate model structures induced by cotorsion pairs involving Gorenstein homological dimensions. In particular, we show that for any Cohen-Macaulay local ring admitting a canonical module the stable category of Gorenstein projective modules and that of Gorenstein injectives are Quillen equivalent.

References

0. G. Dalezios, H. Holm, S. Estrada, Quillen equivalences between Gorenstein model categories, in preparation
1. Mark Hovey, Cotorsion pairs, model category structures, and representation theory, Math. Z. 241 (2002), no. 3, 553592. MR1938704
2. James Gillespie, Model structures on exact categories, J. Pure Appl. Algebra 215 (2011), no. 12, 28922902 MR2811572
3. Yuefei Zheng and Zhaoyong Huang, Triangulated equivalences involving gorenstein projective modules, preprint, 2016

DEPARTAMENTO DE MATEMÁTICAS, UNIVERSIDAD DE MURCIA, 30100 MURCIA, SPAIN
E-mail address: `georgios.dalezios@um.es`