Global perinormality in a generalization of a $D + M$ construction and graded perinormality

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Abstract

Perinormal and globally perinormal domains were first introduced by Epstein and Shapiro in 2016. An integral domain R is globally perinormal (resp. perinormal) if every going-down overring (resp. every local going-down overring) is a localization of R. I show that global perinormality is preserved in a pullback construction which encompasses a classical $D + M$ construction. In doing so, a result is given for the transfer of the property that every flat overring is a localization in the pullback construction considered. I will also introduce notions of graded perinormality and graded global perinormality and give some results for descent of properties between a graded domain and its 0th graded component.

Keywords: Globally perinormal domains, pullbacks, flat overrings, localizations, $D + M$ constructions, graded domains, graded perinormality.