

# Essentially normal Hilbert modules and $K$ -homology II: Quasi-homogeneous Hilbert modules over the two dimensional unit ball

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**Abstract.** In this paper, we mainly consider quasi-homogeneous submodules of  $\mathcal{U}$ -invariant analytic Hilbert modules over the two dimensional unit ball. It is shown that every quasi-homogeneous submodule  $M$  is essentially normal. This paper also shows that each quasi-homogeneous submodule of the Bergman module  $L_a^2(\mathbb{B}_2)$  is  $p$ -essentially normal for  $p > 2$ , and the same result also is valid for the Hardy module. The paper is associated with  $K$ -homology invariants arising from quasi-homogeneous quotient modules.

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