Functional Calculus and Bishop's Property (β) for Several Commuting Operators

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Abstract

Let a be a commuting tuple of bounded operators on a Banach space. Let g be holomorphic in a neighbourhood of the Taylor spectrum of a and let f be holomorphic in a neighbourhood of the Taylor spectrum of $g(a)$. In the first paper the identity $f \circ g(a) = f(g(a))$ is proved using integral formulas.

In the second paper a generalisation of the so-called resolvent identity to several commuting operators is given. Using this identity we prove that Taylor's holomorphic functional can be extended to functions whose $\bar{\partial}$-derivative can be controlled by forms that define the resolvent.

Let D be a strictly pseudoconvex domain in $\mathbb{C}^m$ with smooth boundary and let g be a tuple of bounded holomorphic functions on D. Consider the tuple T_g of operators on the Hardy space $H^p(D)$ defined by $T_g f = gf$. In the third paper we prove that T_g has property $(\beta)_\mathcal{E}$ if $p < \infty$ and in the case $m = 1$ then also if $p = \infty$. As a corollary we have that T_g has Bishop's property (β).

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