Mathematics > Functional Analysis

Fundamental Agler Decompositions

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(Submitted on 1 Jun 2012 (v1), last revised 24 Aug 2012 (this version, v2))

We use shift-invariant subspaces of the Hardy space on the bidisk to provide an elementary proof of the Agler Decomposition Theorem. We observe that these shift-invariant subspaces are specific cases of Hilbert spaces that can be defined from Agler decompositions and analyze the properties of such Hilbert spaces. We then restrict attention to rational inner functions and show that the shift-invariant subspaces provide easy proofs of several known results about decompositions of rational inner functions. We use our analysis to obtain a result about stable polynomials on the polydisk.

Subjects: **Functional Analysis (math.FA)**; Complex Variables (math.CV)
Cite as: **arXiv:1206.0283 [math.FA]**
(or **arXiv:1206.0283v2 [math.FA]** for this version)

Submission history

From: Kelly Bickel [view email]
[v1] Fri, 1 Jun 2012 19:28:50 GMT (20kb)
[v2] Fri, 24 Aug 2012 01:21:45 GMT (23kb)

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