

1096-47-613

**Joseph A Ball\*** ([joball@math.vt.edu](mailto:joball@math.vt.edu)), Department of Mathematics, Virginia Tech, Blacksburg, VA 24061. *Multidimensional linear systems and multivariable weighted Bergman spaces*. Preliminary report.

It is well known that subspaces of the Hardy space over the unit disk which are invariant under the backward shift occur as the image of an observability operator associated with a discrete-time linear system with stable state-dynamics, while forward shift-invariant subspaces have a Beurling-Lax representation as the image of an inner function applied to a Hardy space. Moreover, the inner Beurling-Lax representer can be exhibited as the transfer function of an explicit conservative discrete-time input/state/output linear system. Recently the speaker together with Vladimir Bolotnikov (College of William and Mary) have developed these ideas for a general class of weighted Bergman spaces over the unit disk, expanding on original ideas of Anders Olofsson. This talk will discuss further extensions of these ideas to multivariable weighted Bergman spaces, both in commutative and in freely noncommutative settings. (Received September 07, 2013)