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Alex Kasman* (kasmana@cofc.edu), Department of Mathematics, 66 George Street, Charleston, SC 29424. *Recent Results on the Bispectrality of Integrable Systems.*

We say that a function of the (scalar or vector) variables x and z is *bispectral* if there is an operator in x having it as an eigenfunction with z -dependent eigenvalue *and* an operator in z having it as an eigenfunction with x -dependent eigenvalue. Since there is nothing in this definition to suggest a connection to dynamical systems, it is somewhat mysterious that bispectrality arises in the study of the duality of integrable particle systems in two seemingly unrelated ways. In the case of classical integrable systems duality is manifested in the bispectrality of the Baker-Akhiezer function of the Lax operator and for their quantized versions it is the dual Hamiltonians that share a bispectral eigenfunction. I have been seeking to understand this phenomenon since it was first identified in the case of the self-dual Calogero-Moser system. This talk will list open problems in this program and summarize the progress, including a surprising counter-example recently discovered in an attempt to extend it to the Toda Lattice. (Received January 29, 2018)