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Milen T Yakimov* (yakimov@math.lsu.edu), Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803. *Poisson structures on flag varieties.*

The geometry of Poisson structures originating from Lie theory found numerous applications in representation theory, ring theory, and dynamical systems.

In this talk we will describe in detail the geometry of a class of Poisson structures on complex flag varieties and their relations to Schubert cells and Deodhar partitions, cluster algebras, and total positivity. For hermitian symmetric spaces of compact type, these Poisson structures further elucidate works of Wolf, Richardson, Röhrhle, and Steiberg on the orbit structure of certain Levi factors. For Grassmannians they can be used to give a short proof of the recent cyclicity theorem of by Knutson, Lam and Speyer for the Lusztig stratification. (Received February 09, 2009)