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Milen Yakimov* (yakimov@math.ucsb.edu), Dept of Mathematics, UCSB, Santa Barbara, CA 93106, and **K R Goodearl**, Dept of Mathematics, UCSB, Santa Barbara, CA 93106. *Poisson structures on flag varieties.*

We investigate the geometry of the standard Poisson structures on the partial flag varieties G/P of a complex reductive algebraic group G . Two different approaches will be presented. The first is in the framework of Poisson homogeneous spaces; the second one, which is more geometric, uses an idea of weak splittings of surjective Poisson submersions. It will be shown that this framework provides a Poisson interpretation of a partition of Lusztig of partial flag varieties, defined in relation to total positivity. For parabolic subgroups P with abelian unipotent radical (in which case G/P is a Hermitian symmetric space of compact type) we will prove that the standard Poisson structure on G/P vanishes at all special base points for the orbits of the standard Levi factor of P on G/P , constructed by Richardson, Rohrle, and Steinberg, and will derive further consequences of it. (Received February 14, 2006)