1077-22-86 **Paul Frank Baum*** (baum@math.psu.edu), Department of Mathematics, Penn State University, University Park, PA 16802. *Geometric Structure in the Representation Theory of Reductive p-adic Groups.*

Let G be a reductive p-adic group. Examples are GL(n, F) SL(n, F) where n can be any positive integer and F can be any finite extension of the field Q_p of p-adic numbers. The smooth (or admissible) dual of G is the set of equivalence classes of smooth irreducible representations of G. The representations are on vector spaces over the complex numbers. The smooth dual has one point for each distinct smooth irreducible representation of G. Within the smooth dual there are subsets known as the Bernstein components, and the smooth dual is the disjoint union of the Bernstein components. This talk will explain a conjecture due to Aubert-Baum-Plymen (ABP) which says that each Bernstein component is a complex affine variety. These affine varieties are explicitly identified as certain extended quotients. The infinitesimal character of Bernstein and the L-packets which appear in the local Langlands conjecture are then described from this point of view. Recent results by a number of mathematicians (e.g. V. Heiermann, M. Solleveld) provide positive evidence for ABP. (Received July 24, 2011)