Let $G$ be a connected split reductive $p$-adic group. Examples are $GL(n, F), SL(n, F), SO(n, F),$ and $Sp(2n, F)$ 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 smooth dual of $G$ is the disjoint union of subsets known as the Bernstein components.

The talk will explain the ABPS (Aubert-Baum-Plymen-Solleveld) conjecture which states that each Bernstein component is a complex affine variety. Each of these complex affine varieties is explicitly identified as the extended quotient associated to the given Bernstein component.

The ABPS conjecture has been proved for $GL(n, F), SL(n, F), SO(n, F),$ and $Sp(2n, F)$. The above is joint work with Anne-Marie Aubert, Roger Plymen, and Maarten Solleveld. (Received September 10, 2015)