1070-46-93          **Rongwei Yang\*** (`ryang@math.albany.edu`), 10 Harmony Court, Cohoes, NY 12047. *Banach algebra and Hyperplane Arrangements.*

A complex Banach algebra $\mathcal{B}$ is a complete normed algebra over the complex field $\mathbb{C}$. For a tuple $A = (A_1, \ A_2, \ ..., \ A_n)$ of elements in $\mathcal{B}$, properties of the linear sum $A(z) = z_1 A_1 + z_2 A_2 + ... + z_n A_n$ (called multiparameter pencil of $A$) is of interest in many areas of science. We define the projective spectrum $P(A)$ to be the collection of $z \in \mathbb{C}^n$ such that $A(z)$ is not invertible in $\mathcal{B}$. $P(A)$, as oppose to some classical notions of joint spectrum for tuples, enjoys some nice geometric and topological properties. An interesting example is the case when $A$ is a commuting tuple, in which $P(A)$ turns out to be a union of hyperplanes. This talk examines this connection. We will see why infinite union of hyperplanes arises naturally, and we will also give another point of view on the Orlick-Solomon ideal. (Received February 01, 2011)