1051-13-101 **Kuei-Nuan Lin*** (link@purdue.edu). *Rees Algebras of diagonal ideals.*

Let X be an m by n matrix of variables over a field k. R and S are rings defined by the minors of X. We consider the diagonal ideal $\mathbb{D}$, the kernel of the diagonal map. By the work of Simis-Ulrich, we know the defining equations of special fiber of $\mathbb{D}$. When $R = S$, the special fiber is known as a homogeneous coordinate ring of secant variety of the determinantal variety $\mathcal{Z}(\mathrm{Spec}(R))$. Some of the cases show that the fiber ring is $k[X]$. It is nature to ask whether $\mathbb{D}$ is an ideal of linear type, which means that the natural map from the symmetric algebra of $\mathbb{D}$, $\mathrm{Sym}(\mathbb{D})$, onto the Rees algebra of $\mathbb{D}$, $\mathcal{R}(\mathbb{D})$, is an isomorphism. We aim at a more refined study of the ideal defining $\mathcal{R}(\mathbb{D})$. By knowing the defining equations, we can show that $\mathcal{R}(\mathbb{D})$ is Cohen-Macaulay and $\mathbb{D}$ is an ideal of linear type. (Received August 19, 2009)