1070-14-297

Lev Birbrair, **Walter Neumann** and **Donal O'Shea*** (doshea@mtholyoke.edu), Dean of Faculty Office, Mount Holyoke College, South Hadley, MA 01075. *Exceptional Lines and Separating Sets at Singular Points of Complex Surfaces.* Preliminary report.

Let $(V,p) \subset (\mathbf{C}^n, 0)$ be a surface. The *Nash fiber* at 0 is defined as the limit of the tangent spaces to V, thought of as points in the appropriate Grassmanian, at smooth points $x \in V$ as x tends to 0. This analytic invariant does a much better job of capturing the geometry of the surface than either the Zariski tangent cone or the real cone over the link of the singularity. Its structure has been elucidated by Lê, Teissier and others, who show that the Nash fiber of V (at 0) consists of the Nash fiber of the Zariski tangent cone $(CV, 0)$ (that is, all limits of tangent spaces to the reduced tangent cone) together with finitely many, possibly zero, pencils of planes whose axes are lines, called *exceptional lines*, in CV through 0 (and which can be characterized complex-analytically in different ways). If $0 \in V$ is an isolated singularity and if $(V, 0)$ has a separating set (a three-dimensional semi-algebraic subset with real tangent cone at 0 of real dimension less than three), then we show that the tangent cone to the separating set lies in an exceptional line. (Received February 15, 2011)