1061-14-208 **Ricardo Uribe-Vargas*** (ricardo.uribe-vargas@u-bourgogne.fr) and **Peter Giblin** (pjgiblin@liverpool.ac.uk). *On the flecnodal and vertex curves of a smooth surface and the geometry of its plane sections.*

This is a joint work with Peter Giblin (University of Liverpool). The motivation of my talk comes from Computer Vision, which is concerned with the recognition, extraction and reconstruction of 3-dimensional objects from one or more 2-dimensional images, and with the classification of 2-dimensional and 3-dimensional shapes by means of geometrical or other properties. (Computer Graphics, on the other hand, is concerned more with taking 3-dimensional objects and rendering them in visually appealing ways as images: the inverse problem.)

Here, for each point p of a generic smooth surface S, we consider the sections of S by parallel planes near the tangent plane at p. We are mainly interested in the domain where the Gaussian curvature is negative (*hyperbolic domain*). When the parallel plane tends to the tangent one, the corresponding section becomes singular and undergoes a bifurcation.

In order to understand the so called *symmetry set* (and *medial axis*) of the sections near the singular one, it is very useful to know which vertices and inflections of the section are coming to p as the plane tends to the tangent one, and the configuration of those vertices and inflections on the curve. It happens that the hyperbolic domain is subdivided in several regions on which both the number of vertices and inflections and/or their configurations are different. These sub-domains are separated by two relevant curves of the surface: the flecnodal curve and the vertex curve. I will describe the configurations of vertices and inflections in all those domains and on the flecnodal and vertex curves. (Received April 15, 2010)