

Spin Graphs

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This talk is about a joint work with F. Larrion concerning "plumbing graphs and complex surface singularities". This means a graph together with some extra information: to each vertex v_i we assign a positive integer g_i , called the genus of the vertex, and a weight w_i , an integer. With this information one can construct a matrix A , called an intersection matrix, and a compact 4-dimensional manifold X , whose intersection matrix in the middle homology is precisely the matrix A . One also has a "canonical class K ", which is a 2-dimensional homology class of X defined by A , or by the graph. The idea is to relate the combinatorial properties of the graph with the geometric and topological properties of the manifold X . For instance, one has that X is a spin manifold iff the canonical class K is even. This is very much related with the topology of isolated surface singularities, because a classical theorem says that X is the resolution of such a singularity, up to homeomorphism, iff the matrix A is negative definite.