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Splice diagram and universal abelian covers of isolated surface singularities

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SUMMARY

Splice diagrams were first introduced by Eisenbud and Neumann in the study of isolated surface singularities with integer homology sphere link. It was later extended to the study of surface singularities with rational homology sphere link by Neumann and Wahl. They among other things introduced a set of equations, called splice diagram equations, defined from the splice diagram, provided it satisfies the semigroup condition. They then went on to show that under a further condition on the manifold, the link of the splice diagram equation determines the universal abelian cover of the original singularity. I have shown that the splice diagram always determines the topology of the universal abelian cover. To do so I had to generalize to orbifolds, this also leads to another condition, which is weaker than Neumann and Wahl's, that implies that the splice diagram equation determines the universal abelian cover. This condition is for example always satisfied if one has a two node splice diagram satisfying the semigroup condition.

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