1023-14-1374   **Elizabeth A. Sell*** (`esell@email.unc.edu`), CB# 3250, Phillips Hall, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3250. *Universal abelian covers of normal surface singularities of the form $\{z^n = f(x, y)\}$.*

In recent work, W. D. Neumann and J. Wahl constructed explicit equations for the universal abelian covers of many interesting normal surface singularities (with rational homology sphere links). The construction begins with a good resolution graph Γ and its associated splice diagram (or Eisenbud-Neumann diagram) Δ. If Γ and Δ satisfy certain combinatorial conditions, there is an algorithm that produces explicit equations from Δ for the universal abelian covers of a family of normal surface singularities having resolution graph Γ. Let $\{z^n = f(x, y)\}$ define a surface $X_{f,n}$ with an isolated singularity at the origin in $\mathbb{C}^3$. For f irreducible, we completely characterize, in terms of n and the Puiseux pairs of f, those $X_{f,n}$ for which the resolution graph and splice diagram satisfy the combinatorial conditions defined by Neumann and Wahl. Briefly stated, we find that the conditions are rarely satisfied. We also present an example of a singularity $X_{f,n}$ that does not satisfy these conditions, but nonetheless we can construct its universal abelian cover. (Received September 25, 2006)