

MR2524654 (2010m:14019) 14E15 14B05 14J17

Taalman, Laura (1-JMAD-MS)

**An exact sequence of weighted Nash complexes. (English summary)**

*Illinois J. Math.* **52** (2008), no. 2, 591–610.

The author examines the setup where  $(V, v)$  is an  $n$ -dimensional complex algebraic variety with isolated singularity  $v$  and a neighborhood  $U$  of  $v$  with an embedding  $(U, v) \hookrightarrow (\mathbb{C}^N, 0)$ . The Nash blowup  $\widehat{U}$  of  $U$  is the closure of the image of  $U - v$  in the Grassmannian bundle of  $n$ -spaces in  $T\mathbb{C}^N$  defined by sending each point of  $U - v$  to the tangent space at that point. The restriction to  $\widehat{U}$  of the universal bundle of the Grassmannian bundle is called the Nash bundle. The sheaf of sections of the dual of the Nash bundle is called the Nash sheaf. If a resolution of  $U$  factors through the Nash blowup, the pullback of the Nash sheaf to that resolution is also called a Nash sheaf. When this Nash sheaf is locally free, and its second Fitting ideal sheaf and the pullback of the maximal ideal sheaf at  $v$  are locally principal, the resolution is called complete. A complete resolution gives rise to Hsiang–Pati coordinates, which in turn define certain divisors called the resolution data. The author first generalizes to three dimensions a certain exact sequence on surfaces of W. L. Pardon and M. A. Stern [J. Reine Angew. Math. **533** (2001), 55–80; MR1823864] which use the resolution data. To define the maps of this sequence, the author needs to make a careful choice of certain hyperplanes passing through  $v$  such that their proper transforms intersect the exceptional divisor transversely at simple points. The author then shows that such choices can be made and the exactness of the above sequence can be proved. *Ali Sinan Sertöz*

### References

1. H. Hironaka, *Resolution of singularities of an algebraic variety over a field of characteristic zero I*, Ann. of Math. **79** (1964), 109–203. MR 0199184 MR0199184
2. G. Gonzalez-Sprinberg, *L'obstruction locale d'Euler et le thorme de MacPherson*, Astrisque **82–83** (1981), 7–32. MR 0629121 MR0629121
3. W. Pardon and M. Stern, *Pure Hodge structure on the  $L_2$ -cohomology of varieties with isolated singularities*, J. Reine Angew. Math. **533** (2001), 55–80. MR 1823864 MR1823864
4. L. Taalman, *The Nash sheaf of a complete resolution*, Manuscripta Math. **106** (2001), 249–270. MR 1865567 MR1865567
5. B. Tesser, *Cycles evanescents, sections planes et conditions de Whitney*, Astrisque **7–8** (Singularités Cargèse) (1973), 285–362. MR0374482
6. L. D. Trang and B. Teissier, *Varités polaires locales et classes de Chern des varités singulières*, Ann. of Math. **114** (1981), 457–491. MR 0634426 MR0634426

*Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.*