Quasi-convenient Newton non-degenerate line singularities and Bekka's (c)-regularity

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Consider an analytic function $f(t, \mathbf{z})$ defined in a neighbourhood of the origin of $\mathbb{C} \times \mathbb{C}^n$ such that for all t, the function $f_t(\mathbf{z}) := f(t, \mathbf{z})$ defines a hypersurface of $\mathbb{C}^n$ with a line singularity at $\mathbf{0} \in \mathbb{C}^n$. Denote by $V(f)$ the hypersurface of $\mathbb{C} \times \mathbb{C}^n$ defined by $f(t, \mathbf{z})$ and write Σf for its singular locus. We assume that f_t is "quasi-convenient" and Newton non-degenerate. Within this framework, we show that if the Lê numbers of f_t are independent of t for all small t, then Σf is smooth and $V(f) \setminus \Sigma f$ is Bekka (c)-regular over Σf. This is a version for line singularities of a result of Abderrahmane concerning isolated singularities.

As a corollary, we obtain that a family $\{f_t\}$ of quasi-convenient, Newton non-degenerate, line singularities with constant Lê numbers as above is topologically equisingular if $n \neq 4$. In particular, this applies to families with non-constant Newton diagrams, and therefore extends, in some direction, a result previously observed by Damon.

This is a joint work with Öznur Turhan.