The Łojasiewicz Exponent of Semi-quasihomogeneous Singularities

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Let $f\colon (\mathbb{C}^n, 0) \to (\mathbb{C}, 0)$ be a semi-quasihomogeneous function. We give a formula for the local Łojasiewicz exponent $\mathrm{Ł}_0(f)$ of f, in terms of weights of f. In particular, in the case of a quasihomogeneous isolated singularity f, we generalize a formula for $\mathrm{Ł}_0(f)$ of Krasiński, Oleksik and Płoski ([1]) from 3 to n dimensions. This was previously announced by Tan, Yau and Zuo in [2], but as a matter of fact it has not been proved correctly there (see AMS review MR2679619 for details).

As a consequence of our result, we get that the Łojasiewicz exponent is a topological invariant in topologically trivial families of singularities.

References

[1] Tadeusz Krasiński, Grzegorz Oleksik and Arkadiusz Płoski, *The Łojasiewicz exponent of an isolated weighted homogeneous surface singularity*, Proc. Amer. Math. Soc. 137(10), 2009, 3387–3397.

[2] Shengli Tan, Stephen S.-T. Yau and Huaiqing Zuo, *Łojasiewicz inequality for weighted homogeneous polynomial with isolated singularity*, Proc. Amer. Math. Soc. 138(11), 2010, 3975–3984.