

G_2 -METRICS OVER CALABI-YAU LINKS

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Resumo/Abstract:

I propose a contemporary angle on Milnor's celebrated study of hypersurface singularity links, from the perspective of special metrics with holonomy in G_2 . The 7-dimensional link K of a weighted homogeneous hypersurface on the round 9-sphere in \mathbb{C}^5 has a nontrivial null Sasakian structure which, in many cases, is contact Calabi-Yau, as shown by Habib and Vezzoni [2]. It admits a canonical co-closed G_2 -structure φ induced by the Calabi-Yau 3-orbifold basic geometry. We distinguish these pairs (K, φ) by the \mathbb{Z}_{48} -valued ν invariant recently introduced by Crowley and Nordström [3], for which we will prove odd parity and derive an algorithmic formula.

References

- [1] Omegar Calvo-Andrade, Lázaro Rodríguez and Henrique Sá Earp, *Gauge theory and G_2 -geometry on Calabi-Yau links*, arxiv:1606.09271v2 (2016)
- [2] Georges Habib and Luigi Vezzoni, *Some remarks on Calabi-Yau and hyper-Kähler foliations*, *Differential Geom. Appl.* **41** (2015), 12-32. MR3353736
- [3] Diarmuid Crowley and Johannes Nordström, *New invariants of G_2 -structures*, *Geometry & Topology* **19** (2015), no. 5, 2949-2992. MR3416118