

Open problems on the geometry (at infinity) of GRS and singularity models

- *Must any singularity model have bounded $|\text{Rm}|$? Weaker questions would be for $|\text{Rc}|$ or R .* By Grisha Perelman's work, this is true in dimension 3.
- *Must any gradient Ricci soliton have bounded $|\text{Rm}|$?* There are works of Ovidiu Munteanu and Natasa Sesum and Ovidiu Munteanu and Mu-Tao Wang.
- *One can combine the two assumptions above.*
- *Under either or both of the two assumptions above, does the asymptotic cone exist? Is it unique? Is it regular?* There is work by Jeff Cheeger, Toby Colding, and Gang Tian on Ricci flat manifolds.
- *Must a shrinker which does not split have positive AVR?* There is work of Fuquan Fang, Xiang-Dong Li, and Zhenlei Zhang and Ovidiu Munteanu and Jiaping Wang on sufficient conditions for splitting.
- *Are there examples of nonsplitting shrinkers whose curvatures are not quadratically decaying?* The examples of Misha Feldman, Tom Ilmanen, and Dan Knopf have quadratic curvature decay.