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On Toric Sasakian Geometry

A toric Sasakian structure is a toric contact structure with a compatible Sasakian metric whose isometry group contains the torus of the toric contact stucture. We lay the foundations for the study of toric Sasakian geometry by studying the Sasaki cone lying in the Lie algebra of the torus together with its underlying CR structure. In particular, we discuss the existence of both regular and irregular toric Sasakian structures in dimension 5 as well as its relation to the Sasaki–Einstein case.