A CENSUS OF TETRAHEDAL HYPERBOLIC MANIFOLDS AND LINKS

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A cusped hyperbolic 3-manifold is said to be *tetrahedral* if it can be decomposed into regular ideal tetrahedra. Simplest examples of tetrahedral manifolds are well-known the Gieseking manifold [1] and its double-cover the figure-eight knot complement. A census of all orientable tetrahedral manifolds with at most 9 tetrahedra can be found in [2].

We provide a census of all tetrahedral manifolds with at most 25 (orientable case) and 21 (non-orientable case) tetrahedra [3]. The following statement gives a number of tetrahedral manifolds with a fixed number of tetrahedra.

Theorem. [3] *The number of tetrahedral manifolds up to* 25 *tetrahedra for orientable manifolds and up to* 21 *tetrahedra for non-orientable manifolds are listed in the following table.*

	tetrahedral manifolds			tetrahedral manifolds	
Tetr.	orientable	non-or.	Tetr.	orientable	non-or.
1	0	1	14	58	113
2	2	1	15	81	822
3	0	1	16	96	142
4	4	2	17	8	52
5	2	8	18	199	810
6	7	10	19	25	326
7	1	1	20	1684	22340
8	13	6	21	31	251
9	1	6	22	381	?
10	47	197	23	58	?
11	0	17	24	1465	?
12	47	80	25	7367	?
13	3	8			

Also we found link complements which appear in the census.

References

[1] C.C. Adams, "The noncompact hyperbollic 3-manifold of minimal volume", *Proc. AMS*, Vol. 100, N. 4, 601–606 (1987).

[2] A.Yu. Vesnin, V.V. Tarkaev, E.A. Fominykh, "Cusped hyperbolic 3-manifolds of complexity 10 having maximum volume", *Proceedings of the Steklov Institute of Mathematics*, Vol. 289, Suppl. 1, 227–239 (2015).

[3] E. Fominykh, S. Garoufalidis, M. Goerner, V. Tarkaev, A. Vesnin, "A census of tetrahedral hyperbolic manifolds", Preprint arXiv:1502.00383.

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