

Counting Steiner triple systems

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Terry Griggs observed in his survey paper [1] that the enumeration of Steiner triple systems (STSs) proceeded by centuries: the two STS(13)s were known in the 19th century, the 80 STS(15)s in the 20th, and the STS(19)s in the 21st. He further speculated that the number of STS(21)s might have to wait until the 22nd century or the general availability of quantum computing. This is not the case; the STS(21)s have now been counted with traditional computers (in 82 core-years). Computational approaches for counting STSs will here be discussed. These lead to an algorithm that has been used to obtain the number of isomorphism classes of STS(21)s, 14,796,207,517,873,771. The full article with this result has now been published [2].

References

- [1] T. S. Griggs, Steiner triple systems and their close relatives, *Quasigroups Related Systems*, 19, 23–68 (2011)
- [2] D. Heinlein, P. R. J. Östergård, Enumerating Steiner triple systems, *J. Combin. Des.*, 31, 479–495 (2023)