

HOW TO DECOMPOSE THE AFFINE PLANE INTO PARABOLAS

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In 2003, J. Šiagiová and M. Meszka found a packing of 5 copies of the Hoffman-Singleton graph into K_{50} in which all the graphs shared a group of automorphisms of order 25 acting semiregularly on vertices.

We show that there are exactly 16 such packings and that they all stem from unique system of 5 mutually disjoint ovals in the projective plane of order 5 with a common tangent.

We will also discuss the existence of q mutually disjoint ovals with a common tangent in the projective plane of order q for other orders.

References

- [1] A. J. Hoffman and R. R. Singleton, *On Moore Graphs with Diameters 2 and 3*, IBM Journal of Research and Development, vol. 4, no. 5, 497-504, Nov. 1960, <https://doi.org/10.1147/rd.45.0497>
- [2] J. Šiagiová and M. Meszka, *A covering construction for packing disjoint copies of the Hoffman-Singleton graph into K_{50}* , J. Combin. Designs, 11 (2003), 408-412. <https://doi.org/10.1002/jcd.10049>