

Cartan coherent configurations*Andrey Vasil'ev**Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia*

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This is joint work with Ilia Ponomarenko

The Cartan scheme \mathcal{X} of a finite group G with a (B, N) -pair is defined to be the coherent configuration associated with the action of G on the right cosets of the Cartan subgroup $B \cap N$ by the right multiplications. It is proved that if G is a simple group of Lie type, then asymptotically, the coherent configuration \mathcal{X} is 2-separable, i.e. the array of 2-dimensional intersection numbers determines \mathcal{X} up to isomorphism. It is also proved that in this case, the base number of \mathcal{X} equals 2. This enables us to construct a polynomial-time algorithm for recognizing the Cartan schemes when the rank of G and order of the underlying field are sufficiently large. One of the key points in the proof of the main results is a new sufficient condition for an arbitrary homogeneous coherent configuration to be 2-separable.