

Geometry of curves in
parabolic homogeneous spaces

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I Statement of the problem

Natural distributions on parabolic homogeneous spaces

G be a semisimple group

\mathfrak{g} be its Lie algebra

P be a parabolic subgroup of G

\mathfrak{p} be the Lie algebra of P

Then \mathfrak{g} is equipped with the natural structure of graded Lie algebra:

$$\mathfrak{g} = \bigoplus_{i=-\mu}^{\mu} \mathfrak{g}_i \quad \text{s.t.}$$

$$\mathfrak{p} = \bigoplus_{i \geq 0} \mathfrak{g}_i.$$

Natural distributions on parabolic homogeneous spaces

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Consider the corresponding homogeneous space $M = G/P$

Let $o = eP$ be the coset of identity.

Then $T_o M \cong \mathfrak{g}/\mathfrak{p}$

Let D be the G -invariant distribution equal to $\mathfrak{g}_{-1} \bmod \mathfrak{p}$ at o - natural G -invariant distribution on G/P

We are interested in the problem of equivalence of integral curves of the natural distribution D on G/P with respect to the action of G (both for unparametrized and parametrized curves)

