

Differential invariants by transvection

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In this talk we describe an \mathfrak{sl}_2 -representation in the space of differential invariants of parametrized curves in homogeneous spaces. The representation is described by three operators, one of them being the total derivative D . We use this representation to find a basis for the space of differential invariants of curves in a complement of the image of D , and so generated by transvection. These are natural representatives of first cohomology classes in the invariant bicomplex. We describe algorithms to find these basis and study most well-known geometries.