

## Maxwell's equations in Carnot groups

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In this talk we present a geometric formulation of Maxwell's equations in Carnot groups (connected simply connected nilpotent Lie group with stratified Lie algebra of step  $\kappa$ ) in the setting of the intrinsic complex of differential forms defined by M. Rumin. We show that these equations are invariant under the action of suitably defined Lorentz transformations, and we prove the equivalence of these equations with differential equations “in coordinates”. Moreover, we analyze the notion of “vector potential”, and we show that it satisfies a new class of  $2\kappa$ th order evolution differential equations.