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On nonholonomic higher order dynamics

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Abstract: Dynamics associated with higher order lagrangians and hamiltonians are studied, in the presence of linear, affine and non-linear constraints of an arbitrary order that are adapted to a foliation \mathcal{F} on a manifold M . According to the degree of the Euler-Lagrange equation of the higher order lagrangian, we study several cases, when some regularity conditions can be considered. The regularity conditions considered here are related to some semispray like conditions, when certain vector fields are obtained having as integral curves solutions of the motion. Continuous and discrete cases are both considered.