Average control system and Finsler geometry

(common work with Alex Bombrun)

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This talk will define an "average control system" for system that have a conservative drift and a very small control. The prototype is low thrust orbital transfer of earth sattelites. Using averaging to treat small perturbations of integrable systems is not new; the originality here is that averaging can be performed before the variations of the control are decided, thus yielding really an "average control system". Under some rank assumtions, that are satisfied in the case of low thrust transfer, the new control system defines a norm in each tangent subspace. It is not in general twice differentiable, so that the term "finsler geometry" is not quite appropriate, but we shall present preliminary results.