

# Elements of Optimal Control

*Lecture course in Program Systems Institute, Pereslavl-Zalesky*

January–March 2023

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## Plan of the course ( $\approx 10$ lectures)

1. Optimal Control Problem: Statement and existence of solutions
2. Elements of Exterior Calculus and Symplectic Geometry
3. Pontryagin Maximum Principle (with a proof)
4. Second Order Optimality Conditions
5. Sufficient Optimality Conditions

## References

1. A.A. Agrachev, Yu.L. Sachkov, *Control theory from the geometric viewpoint*, Berlin Heidelberg New York Tokyo. Springer-Verlag. 2004
2. A. Agrachev, D. Barilari, U. Boscain, *A Comprehensive Introduction to sub-Riemannian Geometry from Hamiltonian viewpoint*, Cambridge Studies in Advanced Mathematics, Cambridge Univ. Press, 2019