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Differential Geometry, Differential Equations, and Mathematical Physics

The Wisła 19 Summer School

This volume presents lectures given at the Wisła 19 Summer School: Differential Geometry, Differential Equations, and Mathematical Physics, which took place from August 19 - 29th, 2019 in Wisła, Poland, and was organized by the Baltic Institute of Mathematics. The lectures were dedicated to symplectic and Poisson geometry, tractor calculus, and the integration of ordinary differential equations, and are included here as lecture notes comprising the first three chapters. Following this, chapters combine theoretical and applied perspectives to explore topics at the intersection of differential geometry, differential equations, and mathematical physics. Specific topics covered include:

- Parabolic geometry
- Geometric methods for solving PDEs in physics, mathematical biology, and mathematical finance
- Darcy and Euler flows of real gases
- Differential invariants for fluid and gas flow

Differential Geometry, Differential Equations, and Mathematical Physics is ideal for graduate students and researchers working in these areas. A basic understanding of differential geometry is assumed.

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