

Finite Jet Spaces.

- Introduction: a geometrical setting for PDEs
- Fiber bundles
- Jets of sections
- Jet bundles
- Jet sections

The Cartan Distribution.

- The Cartan distribution
- PDEs and their solutions
- Affine structures in Jet bundles
- Jets of submanifolds
- Integral submanifolds of the Cartan distribution

Symmetries of PDEs.

- Symmetries of the Cartan distribution
- Lie-Bäcklund theorem
- Lie fields, generating sections and their secondary interpretation
- Jacobi bracket
- Symmetries of PDEs
- Defining equations for symmetries of PDEs
- Intrinsic and extrinsic symmetries

Infinite Jet Space.

- Prolongation of a differential equation
- Infinite jets and the infinite jet bundle
- Differential calculus on the infinite jet manifold
- The Cartan distribution on the infinite jet manifold and its maximal integral submanifolds
- Elementary sub-diffieties of the infinite jet manifold

Higher Symmetries of PDEs.

- Higher Lie fields and their generating sections
- Higher Jacobi bracket
- Higher symmetries of PDEs
- Universal linearization and defining equation of higher symmetries
- Extrinsic and intrinsic higher symmetries
- Example of computation of higher symmetries