# DIFFERENTIAL GEOMETRY/PDE SEMINAR

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## Pseudodifferential operators on a manifold with connection

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Given a pseudodifferential operator on a manifold, only the principal symbol is defined because low order terms of the symbol do not survive in a coordinate change. The main idea of the present work is as follows: a connection on a manifold allows us to define the full symbol of a pseudodifferential operator in an invariant way such that the symbol survives in a coordinate change. The latter is called the geometric symbol in order to distinguish it from the coordinate-wise symbol. We develop the traditional calculus for geometric symbols: expression of the geometric symbol through the coordinate-wise one, the formula for the geometric symbol of the product of two operators and of the dual operator.

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