

First Order Operators and Boundary Triples

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We introduce a first order approach to the abstract concept of boundary triples for Laplace operators. Our main application is the Laplace operator on a manifold with boundary; a case in which the ordinary concept of boundary triples does not apply directly. In our first order approach, we show that we can use the usual boundary operators also in the abstract Green's formula. Another motivation for the first order approach is to give an intrinsic definition of the Dirichlet-to-Neumann map and intrinsic norms on the corresponding boundary spaces. We also show how the first order boundary triples can be used to define a usual boundary triple leading to a Dirac operator.