1081-35-88 **Yuri Latushkin*** (latushkiny@missouri.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211, and **Alin Pogan**. *The infinite dimensional Evans function.*

We introduce generalized operator valued Jost solutions of first order ill-posed differential equations on Hilbert spaces. We then construct an infinite dimensional Evans function for abstract differential equations as a 2–modified Fredholm determinant of the operator obtained by adding the values at zero of the generalized operator valued Jost solutions. Next, we prove a formula that connects the 2–modified Evans determinant and the 2–modified determinant related to the Birman–Schwinger type operator associated to the ill-posed equation. Using this formula, we construct a holomorphic infinite dimensional Evans function for second order differential operators on infinite cylinders whose zeros are the eigenvalues of the differential operators. (Received February 01, 2012)