1095-81-266 **Michael Anthony Maroun*** (mmaro001@ucr.edu). *A New Method of Analysis for the Spectrum of the Sum of the Laplace Operator and a Finite Number of Derivatives of the Dirac Delta Distribution.*

A new method of analysis was developed to determine the spectrum of the operator given by the sum of the Laplace operator and a finite number of derivatives of the Dirac measure on $\mathbb{R}$. The method is extended to $\mathbb{R}^n$ and an alternative proof of the empty bound state spectrum for the sum of the Laplace operator and the Dirac delta measure when $n \geq 4$ is obtained. Previous proofs required either operator indices from functional analysis or non-standard analysis. The essence of the new method involves the smoothing of solutions of the operator equation by convolution and subsequent extraction of local information to obtain the spectrum. (Received September 10, 2013)