1135-VM-2666 **Hoewoon B. Kim***, Department of Mathematics Kidder Hall 368, Oregon State University, Corvallis, OR 97331-4605. *The Stability of Partial Differential Equations in terms of Duhamel's Principle.*

In 1940, a Polish-American mathematician, S. M. Ulam proposed the stability problem of the linear functional equation $f(x+y) = f(x) + f(y)$ that can be generalized as "Under what conditions a mathematical object satisfying a certain property approximately must be close to an object satisfying the property exactly?". One year later, the first, affirmative, and partial solution to Ulam's question was provided by D. H. Hyers by explicitly constructing the linear function in Banach spaces directly from a given approximate function. For the last decades, stability problems of various functional equations, not only linear case, have been extensively investigated and generalized by many mathematicians. An extension of the Ulam's stability problems in terms of differential equations was recently proposed for ordinary differential equations and are actively studied by a variety of scholars in various fields now. In this presentation, we will define the stability problem of initial and boundary problems of partial differential equations and instigate the stability of the heat/diffusion equations through the Duhamel's principle argument. (Received September 26, 2017)