**UTRGV**

# School of Mathematical and Statistical Sciences

## *Colloquium Series*
## $\overline{\partial}$–Methods in Complex Analysis

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**Texas A&M University**

### Abstract

In this lecture, we will indicate some typical applications of $\overline{\partial}$-methods in complex analy-sis of one and several variables. We start with the solution of the inhomogeneous $\overline{\partial}$-equation in a planar domain, which lends itself to a simple proof of the Mittag–Leffler theorem on holomorphic functions with prescribed poles. Next, we describe how one variable methods give the solution of the inhomogeneous Cauchy-Riemann equations in $\mathbb{C}^2$ when the right hand side has compact support, and how this simple observation already leads to a phe-nomenon that is radically different from the one variable case: holomorphic functions in certain domains automatically extend holomorphically to a bigger domain. This leads to the question of domains of existence of holomorphic functions, and we indicate how these domains are characterized by the solvability of the inhomogeneous $\overline{\partial}$-equations. Finally, we add some remarks about solving the inhomogeneous equations with regularity estimates up to the boundary (time permitting).

### Short Bio

Dr. Straube received his diploma in 1977 and doctorate in 1983, both from ETH Zurich. After graduation, he came to the USA and held positions in University of North Carolina at Chapel Hill, Indiana University Bloomington, and University of Pittsburgh. From 1987, he's been working at Texas A&M University (including the position of the math department head in 2011-2019). He also held visiting research positions in Switzerland, Germany, Austria, and the US.

Dr. Straube is an expert in functions of several complex variables. He won the Bergman Prize with his coauthor Harold Boas in 1995. In 2006, he was an invited speaker at the International Congress of Mathematicians in Madrid. In 2012, Dr. Straube was elected a fellow of the American Mathematical Society.

### Date: Friday, April 8, 2022

### Time: 4:00-5:00 pm CT

### Zoom: hhttps://utrgv.zoom.us/j/84584151894

**For further information or for special accommodations, please contact Dr. Alexey Glazyrin via email alexey.glazyrin@utrgv.edu and Dr. Bingyuan Liu via email bingyuan.liu@utrgv.edu**