A Phragmén-Lindelöf Principle in Harmonic Analysis

presented by

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Tuesday
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4:00 - 4:55pm
CSE E119

OPENING REMARKS by
Dr. Win Phillips, Vice-President for Research
Refreshments After the lecture in the Atrium (LIT 339)

Abstract: Let S be a linear space of vector valued functions $u(y)$ on the half-line $y > 0$ whose values belong to some Banach space. We suppose that S is translation-invariant; that is, that if $u(y)$ belongs to S, so does $u(y+t)$ for all $t > 0$. S is called *interior compact* if the unit ball of S in the L^1-norm over a y-interval $[a,b]$ is precompact in the L^1-norm over any proper subinterval $[a',b']$.

Theorem: Any function $u(y)$ in a translation-invariant, interior-compact space that is L^1 on $y > 0$ decays exponentially as y tends to infinity, and has an asymptotic expansion near infinity in terms of exponential functions in y contained in S. This result can be applied to solutions of elliptic equations in a half cylinder.
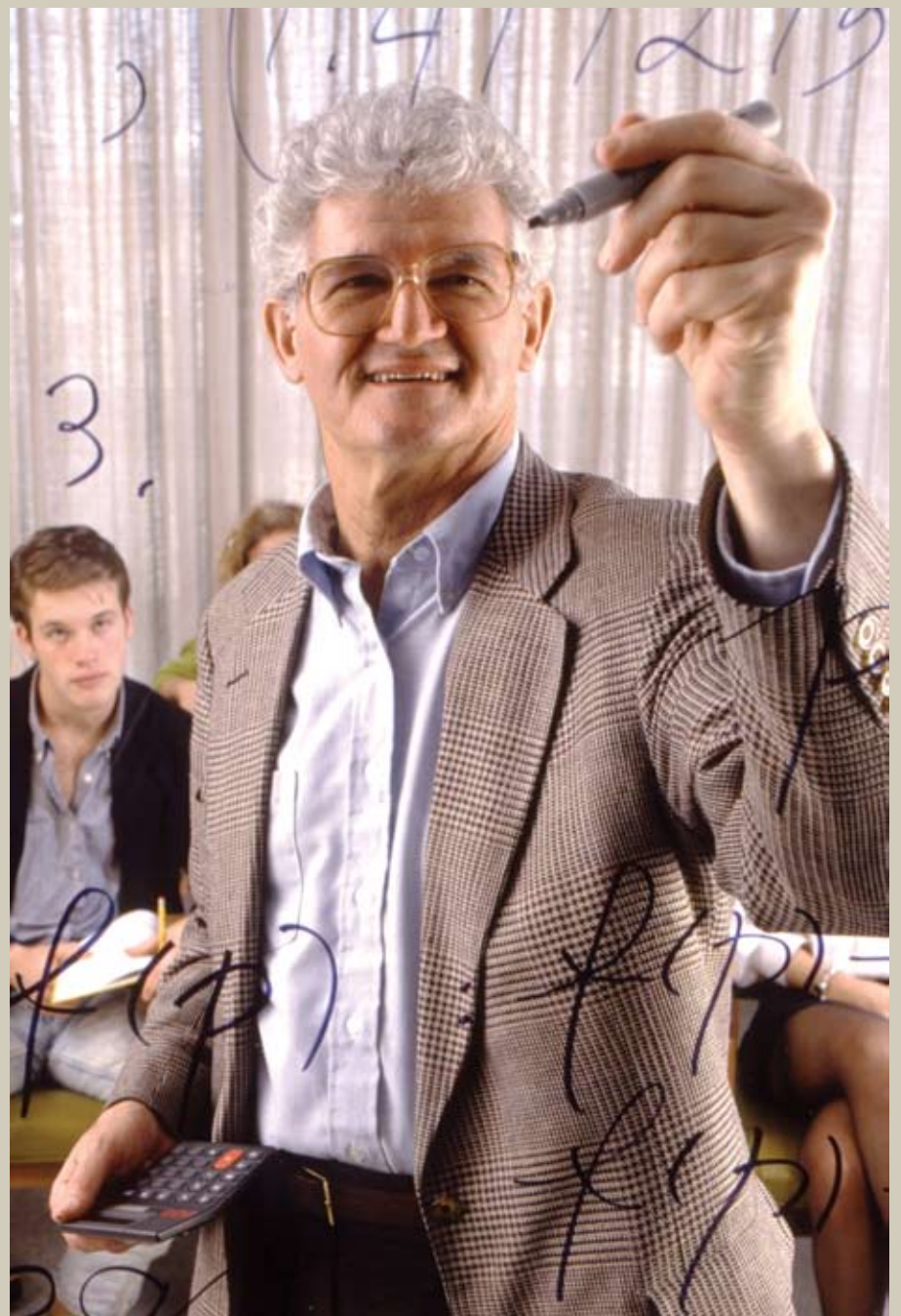
Peter Lax is one of the world's leading authorities in the field of partial differential equations math applications. In the 1950s and 1960s he laid the foundations of the modern theory of hyperbolic systems. He has made ground breaking contributions to solitons, entropy, and shock waves. For his outstanding research contributions spanning half a century, he was awarded the Abel Prize in 2005. His other recognitions include the Norbert Wiener Prize of the American Mathematical Society and the Society of Industrial and Applied Mathematics in 1975, the Wolf Prize of Israel in 1987, and The National Medal of Science in 1986.

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