

1:00 PM, TUESDAY, APRIL 3, 2007, BOYD 302

Speaker: **Prof. Semyon Yakubovich**, Department of Pure Mathematics, University of Porto, Porto, Portugal

Title: **On the least values of L_p -norms for the Kontorovich-Lebedev transform and its convolution**

We establish analogs of the Hausdorff-Young and Riesz-Kolmogorov inequalities and the norm estimates for the Kontorovich-Lebedev transformation and the corresponding convolution. These classical inequalities are related to the norms of the Fourier convolution and the Hilbert transform in L_p spaces, $1 \leq p \leq \infty$. Boundedness properties of the Kontorovich-Lebedev transform and its convolution operator are investigated. In certain cases the least values of the norm constants are evaluated. Finally, it is conjectured that the norm of the Kontorovich-Lebedev operator $K_{i\tau} : L_p(\mathbb{R}_+; x dx) \rightarrow L_p(\mathbb{R}_+; x \sinh \pi x dx)$, $2 \leq p \leq \infty$

$$K_{i\tau}[f] = \int_0^\infty K_{i\tau}(x)f(x)dx, \tau \in \mathbb{R}_+$$

is equal to $\frac{\pi}{2^{1-\frac{1}{p}}}$. It confirms, for instance, by the known Plancherel type theorem for this transform when $p = 2$.

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