KATO AND CAUCHY

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ABSTRACT. This talk will discuss the connection between two problems:

1. Given a function on the real line, consider its holomorphic extension to the upper half plane: the imaginary part of its boundary value is the Hilbert transform of the function. What happens when the real line is replaced by a more rough curve? For example, a Lipschitz curve?

2. Given a bounded, elliptic matrix A, what is the domain of the operator $\sqrt{-\operatorname{div}A\nabla}$? When A is the identity, the operator in question is $\sqrt{-\Delta}$: its domain coincides with the domain of the ∇, where they have comparable L^2 norms.

We will see how the solution to this last question posed by Tosio Kato in 1953 is connected with the boundedness of the Cauchy integral operator on a Lipschitz curve.

REFERENCES

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