Weak type commutator and Lipschitz estimates

Tuesday October 20 – 10h30-11h15

M. Caspers

In 1965 M.G. Krein conjectured that Lipschitz functions on the reals are non-commutative Lipschitz functions. That is: for $f : \mathbb{R} \to \mathbb{C}$ it is true that for any $A, B \in B(H)$ self-adjoint we have

$$\|f(A) - f(B)\| \leq \text{constant}\|A - B\|.$$

Krein's conjecture is known to be false as stated here, but if the uniform norm is replaced by the Schatten-Von Neumann S_p norm then Krein's conjecture has an affirmative answer. In this talk we give a proof of this fact that is optimal: we find the sharpest possible non-commutative Lipschitz estimate (answering a question raised by Nazarov and Peller). This is joint work with D. Potapov, F. Sukochev and D. Zanin.