Fyodor Sukochev (Adelaide):

Perturbation and differentiation formulae in non-commutative L_p spaces This joint work with B. de Pagter (Delft) is concerned with perturbation formulae of the form

$$\|f(a) - f(b)\|_{L_p(\mathcal{M},\tau)} \leq K\|a - b\|_{L_p(\mathcal{M},\tau)},$$

with $K > 0$ being a constant depending on p and f only, where f is a real-valued Lipschitz function and a, b are self-adjoint τ-measurable operators affiliated with a semifinite von Neumann algebra $(\mathcal{M}, \tau)$, such that the difference $a - b$ belongs to $L_p(\mathcal{M}, \tau)$, $1 < p < \infty$. For example, it is established that if $f : \mathbf{R} \to \mathbf{R}$ has a derivative which is of bounded variation, then the estimates above hold in any $L_p(\mathcal{M}, \tau)$, $1 < p < \infty$. It is established further that if, in addition this derivative is continuous, then the operator function f is Gâteaux differentiable in any $L_p(\mathcal{M}, \tau)$, $1 < p < \infty$.