

Vector-valued logarithmic residues and non-commutative Gelfand theory

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A vector-valued logarithmic residue is a contour integral of the type

$$\frac{1}{2\pi i} \int_{\partial D} f'(\lambda) f(\lambda)^{-1} d\lambda, \quad (1)$$

where D is a bounded Cauchy domain in the complex plane and f is an analytic Banach algebra valued function taking invertible values on the boundary ∂D of D . One of the main issues concerning such logarithmic residues (suggested by the situation where f is a scalar function) is the following: if (1) vanishes, under what circumstances does it follow that f takes invertible values on all of D ? Recent developments to be discussed in the talk involve new aspects of non-commutative Gelfand theory.

The talk is a report on joint work with T. Ehrhardt (Pohang, S-Korea) and B. Silbermann (Chemnitz, Germany)