Title: Non-autonomous parabolic systems with rough coefficients.

Abstract: We consider problems of the form

$$\begin{cases} \partial_t u(t,x) = div(A(t,.)\nabla u)(t,x) \quad t \geq 0 \quad x \in \mathbb{R}^n, \\ u(0,.) = f \in L^p(\mathbb{R}^n). \end{cases}$$

for uniformly elliptic coefficients $A(t,.) \in L^\infty(\mathbb{R}^n; M_n(\mathbb{C}))$. In the real valued case, the theory of such problems is well established, and no regularity in the time variable is required. The methods, however, break down in the complex valued case (or more generally for systems). The case of systems can be treated by abstract operator theoretic methods, but these methods impose some time regularity (continuity at least). Here we present a new approach that allows us to treat problems with coefficients which are of bounded variation in time. This is based on results about maximal regularity operators on tent spaces, and is joint work with Pascal Auscher and Sylvie Monniaux.