- **Lewandowski, Max: Physical states for quantum field theory on globally hyperbolic spacetimes (203)**
  A major issue when doing quantum field theory on curved spacetimes is the lack of a distinguished vacuum. To any triple, consisting on a globally hyperbolic spacetime M, a Riemannian vector bundle E and a Green-hyperbolic operator P acting on smooth sections in E, the algebraic approach assigns an abstract C^*-algebra A. States are then defined as positive linear functionals on A and allow for the construction of familar setting, i.e. a Hilbert space with distinguished vacuum vector and the elements of A acting on it as observables. The task therefore is to find admissible states on A and it turns out that the elements of a certain subclass, the quasifree states, are entirely determined by a certain bidistribution on M called two-point-function of the state. In fact this bidistribution is a bisolution of $Pu=0$ and has certain symmetry- and positivity-properties. Moreover for physical reasons one demands that its wave front set satisfies the so-called Hadamard condition. In my talk I will present the construction of bidistributions complying with those requirements in the case of a formally self-adjoint wave operator.