

Oral Exam Questions - Colin Diemer (2006)

Math Physics

Consider a Riemann surface of genus g . Is it spin? (yes) How many spin structures?

Random quick questions about Chern classes and Riemann-Roch.

Random quick questions about Calabi-Yaus (properties, examples, etc.)

Say everything you can about the quintic hypersurface in \mathbb{P}^4 (see above).

C*-algebras

Consider the linear map on $M_n(\mathbb{C})$ given by $\phi(a_{i,j}) = a_{1,1}$. Show that this is a state. Describe the associated GNS representation.

Define the notion of a Hilbert C*-module and (strong) Morita equivalence. Describe this situation for the case of the (smooth) global sections of a vector bundle, also for the C*-algebra of a compact Hausdorff group.