QFT Reading Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematic

Speaker: **Brian Hall**
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Friday, May 6, 2011
9:45 am
258 Hurley Hall

Title: Wick ordering and $P(\phi)_2$ theory

Abstract:
I will briefly explain the definition of Wick-ordered quantization and its relation to the Weyl quantization. I will then explain how Wick ordering can be used to make sense of certain nonlinear functionals of the fields in a free field theory in dimension 2. The moral of the story is that if Integral $[\phi(x)^n, dx]$ makes sense as a polynomial of degree n on the Cameron-Martin space, then the Wick-ordered version of this functional makes sense as an almost-everywhere defined function on the space of distributional fields.

Suppose now that p is a polynomial in one variable that is bounded below, and let $:p(\phi):$ denote the Wick-ordered version of Integral $[p(\phi(x)), dx]$. It can be shown that $\exp[-:p(\phi):]$ has finite integral against the Gaussian measure.