

# MATH/SIUC COLLOQUIUM

$$\frac{2^{\frac{n_1+n_2}{2}} \exp \left\{ -\frac{1}{2} \mu_1' \Sigma_1^{-1} \mu_1 - \frac{1}{2} \mu_2' \Sigma_2^{-1} \mu_2 \right\}}{2^{\frac{n_1+n_2}{2}} \Gamma \left( \frac{n_2}{2} \right) \Gamma \left( \frac{n_1}{2} + 1 \right) |\Sigma_1|^{\frac{1}{2}} |\Sigma_2|^{\frac{1}{2}}}$$
$$\int_{q_2 > 0} \exp \left\{ -\frac{1}{2} q_2 (\text{tr}(\Sigma_1^{-1}) + \text{tr}(\Sigma_2^{-1})) \right\}$$
$$\sum_{i_1=0}^{\infty} \sum_{j_1=0}^{\infty} \sum_{i_2=0}^{\infty} \sum_{j_2=0}^{\infty} \frac{\binom{\frac{1}{2}}{j_1+i_1} \binom{\frac{1}{2}}{j_2+i_2} \binom{\frac{1}{2}}{j_1+j_2+2(i_1+i_2)}}{\binom{\frac{1}{2}}{i_1} \binom{\frac{1}{2}}{i_2} \binom{\frac{n_1}{2}+1}{i_1+j_1} \binom{\frac{n_2}{2}}{j_2+i_2} j_1! i_1! j_2! i_2!}$$
$$C_{[j_1],[i_1]}^{[j_1+i_1]} \left( (\Sigma_1^{-1} - (\text{tr} \Sigma_1^{-1}) I_{n_1}), \Sigma_1^{-1/2} \mu_1 \mu_1' \Sigma_1^{-1/2} \right)$$
$$C_{[j_2],[i_2]}^{[j_2+i_2]} \left( (\Sigma_2^{-1} - (\text{tr} \Sigma_2^{-1}) I_{n_2}), \Sigma_2^{-1/2} \mu_2 \mu_2' \Sigma_2^{-1/2} \right)$$
$$q_2^{\frac{n_1+n_2}{2} + i_1 + j_1 + i_2 + j_2 - 1} {}_1F_1 \left( 1; \frac{n_1}{2} + i_1 + j_1 + 1; \frac{1}{2} q_2 \text{tr}(\Sigma_1^{-1}) \right) dq_2$$

9-8-16

3:00PM

Neckers 156

Daniel Spector

Dept of Applied Mathematics  
National Chiao Tung University  
Hsinchu, Taiwan

Reception immediately following in Math Library.

Place: Neckers 156

Time: 3:00pm

## Title

Taylor Approximations and Sobolev Spaces

## Abstract

In this talk we will introduce the sometimes difficult to understand Sobolev spaces as a simple extension of the Taylor approximation of classically differentiable functions .

