

# COLLOQUIUM

Department of Statistics  
University of South Carolina

## The Exact Size of the Chi Squared Test for Comparing Two Binomial Proportions

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Date: **March 22, 2002 (Friday)**

Time: **2:30-3:30PM**

Place: **LeConte College Room 210A**

**Refreshments:** 3:30-4:00 LC 213

### Abstract

The chi squared test is commonly used to test the homogeneity of two binomial proportions. We will show by accurate computations and analytical proof that even for very large sample sizes the exact size of this test can be nearly 80% larger than the nominal level. For example, a nominal .05 test can have a size of over .09. But, a closer examination of the error properties of this test may indicate that this inflation of size may not be of great concern. We compare the size of the chi squared test to an exact unconditional test that has remarkably good size properties.

About the Speaker: Dr. Roger Berger received his Ph.D. in Statistics from Purdue University in 1977. He is currently Professor at NCSU, and prior to his joining NCSU, he was a faculty at Florida State University. He is a Fellow of the American Statistical Association and of the Institute of Mathematical Statistics. His current research interests are in hypothesis testing, statistical education, (bio)equivalence, generalized linear models, and biostatistics. Jointly with George Casella, he co-authored the book *Statistical Inference* which was published by Duxbury Press in 1990 and with the second edition appearing this year.