1067-60-2135 **Krishna Kaphle***, Department of Mathematics, Texas Tech University, Lubbock, TX 79409, and **Frits H Ruymgaart** and **George Gaines**. *A test for testing the equality of covariance operators.*

The generalization of multivariate statistical procedures to infinite dimensions naturally requires extra theoretical work. In this paper, we will focus on testing the equality of covariance operators. We further elaborate on a procedure derived from the Union Intersection principle in conjunction with a Likelihood Ratio test. This procedure leads to a test statistics which is the largest eigenvalue of a product of operators. We Generalize this procedure by using a test statistic that is based on the first $m \in \mathbb{N}$ largest eigenvalues. Perturbation theory of operators and functional calculus of covariance operators are extensively used to achieve required asymptotics. It is shown that the power of the test is improved with inclusion of more eigenvalues. We perform simulations to verify the testing procedure, using samples from two equivalent Gaussian distributions. (Received September 22, 2010)