1056-78-1698   **Zachary Marzec*** (`biondini@buffalo.edu`), Math Dept, SUNY at Buffalo, Buffalo, NY 14260, **Jonathan Schuster**, Math Dept, SUNY at Buffalo, **Lucas Bunt**, Math Dept, Buffalo State College, and **Benjamin Kanouse**, Math Dept, Buffalo State College. *Efficient computation of failure probabilities in optical fiber communication systems.*

Failures in many industrial systems are extremely rare by design and as a result are very difficult to predict. We develop an adaptive variance reduction technique that combines importance sampling and the cross-entropy method. We then implement this method, to accurately model and predict the occurrence of birefringence-induced failures in installed optical fiber communication systems. (Received September 22, 2009)