1146-62-156 **Xueyan Liu*** (xliu10@uno.edu), 2000 Lakeshore Drive, University of New Orleans, Dept of Mathematic, New Orleans, LA 70148, and **Jiahui Xu**, **Clifford Guy**, **Emilio Boada Romero**, **Douglas Green**, **Cheng Cheng** and **Hui Zhang**. *Colocalization analysis of multi-colored single-molecule microscopy images.*

The study is to propose a co-localization index to determine the degree of interactions between two or more types of signals in super-resolution microscopy fluorescence images or any spatial data in general which have with precise locations of spatial points. After super-resolution image techniques were developed in the past decade, there have been some new coordinate-based methods derived in the literature to study co-localization of dual-color spatial points. However, they were lack of reliability due to ambiguity in their definition. Our paper proposes new methods to calculate degree of co-localization based on solid statistical analysis with explicit edge effect corrections by using geometry and mathematical calculations and validated by extensive simulations. The results of the new method are superior to the current coordinate-based methods. Comparison between our methods and the CBC under different parameter specifications is provided. (Received January 18, 2019)