1147-83-221　　　　**Jesse William Hicks*** (`jesse.hicks@dixie.edu`), Dixie State University, Department of Mathematics, 225 S 700 E, St. George, UT 84790. *Classification of Spacetimes with Symmetry.*

Spacetimes with symmetry play a critical role in Einstein's Theory of General Relativity. Missing from the literature is a correct, usable, and computer accessible classification of such spacetimes. This research fills this gap; specifically, we

　i) give a new and different approach to the classification of spacetimes with symmetry using modern methods and tools such as the Schmidt method and computer algebra systems, resulting in ninety-two spacetimes;

　ii) create digital databases of the classification for easy access and use for researchers;

　iii) create software to classify any spacetime metric with symmetry against the new database;

　iv) compare results of our classification with those of Petrov and find that Petrov missed six cases and incorrectly normalized a significant number of metrics;

　v) classify spacetimes with symmetry in the book Exact Solutions to Einstein's Field Equations Second Edition by Stephani, Kramer, Macallum, Hoenselaers, and Herlt and in Komrakov's paper Einstein-Maxwell equation on four-dimensional homogeneous spaces using the new software.

This talk will briefly discuss these results. (Received January 11, 2019)