Abstract Submitted
for the 4CS20 Meeting of
The American Physical Society

Long-range scalar forces in five-dimensional general relativity L. L. WILLIAMS, Konfluence Research Institute — We report in the peculiar features and characteristics of a long range scalar field. These include how they might masquerade as gravity or electric force, how they cause acceleration of bodies at constant energy, how they can contribute to the "clothed" gravitating mass of a planet, and how they are interpreted as a variable gravitational constant. Our framework for investigation is the classical Kaluza theory that unites tensor gravity, vector electromagnetism, and an unidentified scalar potential. We present the first reports of the value of scalar charge in this theory, and the associated scalar potential. A new, third characteristic lengthscale for the electro-gravitic fields of a body of mass M and charge Q is identified, $\mu_0 Q^2/M$, to go along with the Reissner-Nordstrom lengthscales, GM/c^2 and $Q\sqrt{G\mu_0/c^2}$. With reasonable assumptions about the source terms in this theory, it seems to imply unrealistically large buoyancy forces for charged bodies interacting with the scalar field clothing planetary masses. This could be the first falsifiable prediction of the Kaluza theory since it was introduced a century ago.

Lance Williams
Konfluence Research Institute

Date submitted: 23 Sep 2020 Electronic form version 1.4