1139-83-101   **P. P. Yu***, 501 Westminster Ave., Fulton, MO 65251. *Symplectic induction for the linking theory of shape dynamics.*

Largely motivated by the relational philosophy, a modification to classical canonical gravity known as shape dynamics has been recently developed by physicists with an eye towards quantization. Both Einstein's general relativity and shape dynamics appear as different gauge-fixings of the so-called linking theory. In this talk, symplectic induction is applied to give a natural geometric construction of the linking theory for shape dynamics. The extended phase space with the extended symmetry group **P** of point-wise conformal transformations on the space **M** of Riemannian metrics is shown to be a trivial vector bundle over the original phase space $T^*\mathbf{M}$ in general relativity. The gauge fixing conditions for shape dynamics are analyzed with the assistance of the geometrization of the Lichnerowicz-York equation lifted to the extended phase space. An alternative description is provided to show that the same geometry simply derives from the symplectic construction. (Received February 03, 2018)