**Next Generation QTAIM: Beyond Energetic and Scalar Measures**

Samantha Jenkins

Next Generation Quantum Theory of Atoms in Molecules (NG-QTAIM)   
is currently the only vector-based quantum chemical theory as all other   
quantum chemical theories are scalar-based. NG-QTAIM can, for instance,   
be used to distinguish enantiomers, isotopomers undergoing normal modes   
of vibration, predict ring-opening reaction products, ground and excited   
states at a conical intersection and predict reaction pathways of   
permutation-inversion isomers and ultra-fast phenomena. As a   
consequence, NG-QTAIM can uniquely be used to investigate iso-energetic   
phenomena where the reliance on differences in geometric measures is   
removed.