

1154-65-1189 **Axel G R Turnquist*** (agt6@njit.edu). *Towards Convergent Finite-Difference Schemes for the Monge-Ampère PDE on the Sphere*. Preliminary report.

The optimal transport problem has been found to apply to a wide variety of modern applications, among those include machine learning, geometric optics, seismology, meteorology, and image retrieval and processing. Some recent numerical methods solve the optimal transport problem using its PDE formulation, known in its most simple case as the Monge-Ampère equation, a fully nonlinear second-order elliptic PDE. One particular approach to solving this PDE formulation is by using wide-stencil finite difference schemes. We use these ideas to devise a numerical scheme for solving the PDE formulation of the optimal transport problem on the sphere. This requires taking the geometry into account and also reformulating the discrete comparison principle to derive a convergence result. (Received September 13, 2019)