1163-49-890 **Melissa Tong**, **Jerome Gilles** and **Luminita Aura Vese*** (lvese@math.ucla.edu). *A Joint Variational Model for Atmospheric Distortion Correction.* Preliminary report.

We study the problem of restoring images distorted by atmospheric turbulence, which is a type of inverse problem. Geometric distortions and blur are the two main components of degradations due to atmospheric turbulence. Prior work has been done to address these components separately. We propose two variants of a combined deblurring and geometric distortion correction model, in a variational setting. The minimization problem seeks to find the restored image and the geometric correction in the same formulation. The Euler-Lagrange equations associated with the joint minimization problem are discretized using finite difference schemes and the gradient descent approach. We present numerical results for image restoration using synthetic and real data. (Received September 13, 2020)