1163-35-56 **Farhan Abedin*** (abedinf1@msu.edu) and **Jun Kitagawa**. *Inverse Iteration for the Monge-Ampère Eigenvalue Problem.*

We will present an iterative method for solving the Monge-Ampère eigenvalue problem,

$$\begin{cases} \det D^2 u = \lambda_{MA} |u|^n & \text{in } \Omega, \\ u = 0 & \text{on } \partial\Omega, \\ u \text{ convex.} \end{cases}$$

By a result of Lions, $\lambda_{MA} > 0$ is unique, and all convex solutions u are positive multiples of each other. We show that the iterates $\{u_k\}_{k=0}^{\infty}$ generated by our method converge to a non-trivial solution of the eigenvalue problem, and that $\lim_{k\to\infty} R(u_k) = \lambda_{MA}$, where the Rayleigh quotient $R(u)$ is defined as

$$R(u) := \frac{\int_\Omega |u| \det D^2 u}{\int_\Omega |u|^{n+1}}.$$

The method converges for a wide class of initial choices u_0 that can be constructed explicitly, and does not rely on prior knowledge of the Monge-Ampère eigenvalue λ_{MA}. (Received August 03, 2020)