1148-35-91 **Murat Akman**, **John Lewis**, **Olli Saari** and **Andrew Vogel*** (alvogel@syr.edu), Department of Mathematics, Syracuse University, 215 Carnegie, Syracuse, NY 13244. *Brunn-Minkowski inequality and Minkowski problem for p-Laplace like equations in $\mathbb{R}^n$ for $p \geq n$.* Preliminary report.

We study two classical problems in convex geometry in $\mathbb{R}^n$ associated to $\mathcal{A}$-harmonic PDEs, quasi-linear elliptic PDEs whose structure is modeled on the p-Laplace equation. Let p be fixed with $2 \leq n \leq p < \infty$. For a convex compact set $E \subset \mathbb{R}^n$ we define and then prove the existence and uniqueness of a $\mathcal{A}$-harmonic Green's function G for the complement of E with pole at infinity. Then we define a quantity $\mathrm{C}_{\mathcal{A}}(E)$ which can be seen as the behavior of G near infinity, using this quantity in the place of capacity we prove a Brunn-Minkowski inequality for $\mathrm{C}_{\mathcal{A}}$.

We also consider the Minkowski problem for a measure associated with G, we show that the necessary and sufficient conditions for existence are the same as in the classical Minkowski problem. (Received January 26, 2019)