1135-49-341 **Thomas Wunderli*** (`twunderli@aus.edu`), PO Box 26666, The American Univeristy of Sharjah, Sharjah, Sharjah POBox26666, United Arab Emirates. *Further Results for Functionals on BV Space with Carathéodory Integrands.* Preliminary report.

In this paper we provide conditions on $\varphi(x,p)$ for which the formula

$$\int_\Omega \varphi(x,Du) := \sup_{\phi\in\mathcal{V}} \left\{ -\int_\Omega u \div \phi + \varphi^*(x,\phi(x))dx \right\}$$

$$= \int_\Omega \varphi(x,\nabla u)dx + \int_\Omega \psi(x)\|D^s u\|$$

holds for each $u \in BV(\Omega)$. Here $\varphi : \Omega \times \mathbf{R}^N \to \mathbf{R}$, $\Omega \subset \mathbf{R}^N$ open and bounded, φ convex in p for a.e. x, φ satisfies the linear growth assumption $\varphi(x,p) \leq \psi(x)|p| + c$ for each $|p| \geq \beta$, for a.e. x, $\mathcal{V}$ is defined by

$$\mathcal{V} = \left\{ \phi \in C_0^1(\Omega, \mathbf{R}^N) : \phi(x) \leq \psi(x) \text{ for all } x \in \Omega \right\},$$

φ^* is the convex dual of φ, and $\|D^s u\|$ is the singular part of Du. Importantly, continuity in x is not assumed. Existence results to certain minimization problems involving $\int_\Omega \varphi(x,Du)$ over BV space then easily follow. (Received September 14, 2017)