

# A chain rule formula in $BV$ and application to lower semicontinuity

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A new lower semicontinuity theorem for integral functionals with linear growth is proved. This result is obtained without assuming any continuity of the energy density  $f$  with respect to the spatial variable  $x$ , but by requiring only a  $BV$ -dependence. The proof is based on a new chain rule formula in the space  $BV$  which does not seem to be contained in any of the similar results known in the literature and which could be of independent interest.