

The standard way of deriving the weak formulation of balance equations of continuum mechanics is derived from their localized form, and thus requires differentiability of functions involved in the corresponding balance law. However, the existence of classical solutions of these equations is often not known. It would be suitable to find a transition to the weak formulation of balance laws without the need of their differential form. The aim of this work is to show that the initial integral form of balance equations of continuum mechanics, provided relatively weak assumptions, directly implies their weak formulation, and thus that the weak solution is for these equations a more natural notion than the classical solution is.