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**A Relaxation Result for Non-Convex and Non-Coercive Simple Integrals**

We consider the following classical autonomous variational problem: Minimize

$$\left\{ F(u) = \int_a^b f(u(x), u'(x)) \, dx \, : \, u \in AC([a,b]), u(a) = \alpha, u(b) = \beta, \, u([a,b]) \subseteq I \right\}$$

where $I$ is a real interval, $\alpha, \beta \in I$, and $f : I \times \mathbb{R} \to [0, +\infty)$ is possibly neither continuous, nor coercive, nor convex; in particular $f(s, \cdot)$ may be not convex at 0. Assuming the solvability of the relaxed problem, we prove under mild assumptions that the above variational problem has a solution, too.

**Keywords**: Non-convex variational problem, non-coercive variational problem, autonomous variational problem, relaxation result.

**MSC**: 49K05,49J05