# Nonlinear integral equations with increasing operators in measure spaces

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In what follows $(X, \mathcal{A}, \mu_i)$, $i = 1, \ldots, n$ are measure spaces, and $S$ is a function from $X$ into $\mathcal{A}$. We study integral equations of the form

$$y(x) = f(x) + \sum_{i=1}^{n} g_i(x) \int_{S(x)} h_i \circ y \, d\mu_i, \tag{1}$$

where $f : D_f(\subset X) \to \mathbb{R}$, $g_i : D_{g_i}(\subset X) \to \mathbb{R}$, $i = 1, \ldots, n$, and $h_i : I_i(\subset \mathbb{R}) \to \mathbb{R}$ for $i = 1, \ldots, n$. The main results are existence theorems for (1) under the condition that the operator defined by the equation is increasing. We shall see that some of the problems formulated for the classical integral equations can be solved in a very satisfactory way in this essentially more general case, and the results give unified approaches of the problems. Finally, some applications are given.

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