Boundary value problems for systems of functional differential equations

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Efficient conditions guaranteeing the existence of a solution to the boundary value problem for systems of functional differential equations

$$u_i'(t) = f_i(u_1, \ldots, u_n)(t) \qquad \text{for a. e. } t \in [a, b] \quad (i = 1, \ldots, n),$$
$$h_i(u_1, \ldots, u_n) = 0 \qquad (i = 1, \ldots, n)$$

are established. Here, $f_i \colon C([a, b]; \mathbb{R}^n) \to L([a, b]; \mathbb{R})$ are continuous operators satisfying the Carathéodory conditions and $h_i \colon C([a, b]; \mathbb{R}^n) \to \mathbb{R}$ are continuous functionals. The results are concretized for the equations with deviating arguments.

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