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**Seminonlinear boundary value problems for nondegenerate differential-algebraic system.**

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Summary: In the article we obtained sufficient conditions for the existence of a solution to the nonlinear Noetherian boundary value problem for a nondegenerate system of differential-algebraic equations. The obtained results differ from the ones in the works of *S. L. Campbell* [Singular systems of differential equations. Research Notes in Mathematics. 40. San Francisco - London - Melbourne: Pitman Advanced Publishing Program (1980; [Zbl 0419.34007](#))], *Yu. E. Boyarintsev* and *V. F. Chistyakov* [Algebro-differentsial'nye sistemy. Metody resheniya i issledovaniya (Russian). Novosibirsk: Nauka (1998; [Zbl 0990.34006](#))], *A. A. Boichuk* and *A. M. Samoilenko* [Generalized inverse operators and Fredholm boundary-value problems. Translated from the Russian by P. V. Malyshev. 2nd edition. Berlin: De Gruyter (2016; [Zbl 1394.47001](#))]. To construct solutions of the considered boundary value problem, we used an iterative scheme using the method of simple iterations. The proposed solvability conditions and the scheme for finding solutions are illustrated with an example.

**MSC:**

- [34A09](#) Implicit ordinary differential equations, differential-algebraic equations
- [34B15](#) Nonlinear boundary value problems for ordinary differential equations
- [34A45](#) Theoretical approximation of solutions to ordinary differential equations

**Keywords:**

nonlinear Noetherian boundary value problems; differential-algebraic equations; pseudoinverse matrices

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