

The Green's function and the basis property of the eigenfunctions of a boundary value problem with involution

A.M. Sarsenbi¹, M.B. Utelbayeva²

¹ *M. Auezov South Kazakhstan State University, Shymkent, Kazakhstan
abzhahan@gmail.com*

Abstract: In this note constructed the Green's function of the boundary value problem for a differential equation with the help of involution with constant coefficients. With its help, the basis property of the eigenfunctions is established.

This work was supported by the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan, grant AP05131225.

Keywords: Equation with involution, Green's function, eigenfunctions, eigenvalue, boundary value problem, spectral problem, basis.

REFERENCES

- [1] M. Kirane, A.S. Nasser; *Inverse problems for a nonlocal wave equation with an involution perturbation* J. Nonlinear Sci. Appl., vol. 9, pp. 1243-1251, 2016.
- [2] B. Ahmad, A. Alsaedi, M. Kirane, R.G. Tapdigoglu, ; *An inverse problem for space and time fractional evolution equations with an involution perturbation*, Quaestiones Mathematicae, vol. 40, no. 2, pp. 151-160, 2017.
- [3] A. Cabada and F.A.F. Tojo; *On linear differential equations and systems with reflection*, Applied Mathematics and Computation, vol. 305, pp. 84-102, 2017.
- [4] F. A. F. Tojo, ; *Computation of Green's functions through algebraic decomposition of operators*, Boundary Value Problems, vol. 2016, no. 1, p. 167, 2016.
- [5] A. Cabada and F.A.F. Tojo; *Green's functions for reducible functional differential equations*, Bull. Malays. Math. Sci. Soc., 2016.
- [6] Allaberen Ashyralyev and Abdisalam Sarsenbi; *Green's function of the second order differential operator with involution*, AIP Conference proceedings 2016. - V.1759, P. 020002-1- 020002-4.
- [7] A.M. Sarsenbi; *Unconditional bases related to a nonclassical second-order differential operator*, Differential Equations, vol. 46, issue 4, pp. 509-514, 2010.
- [8] L. Kritskov, A.M. Sarsenbi; *Spectral properties of a nonlocal problem for a second-order differential equation with an involution*, Differential Equations, vol. 51, no. 8, pp. 984-990. 2015.