On smoothness of eigenfunctions for differential–difference operators

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10:00-10:30

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Unlike ordinary differential equations, smoothness of generalized solutions to boundary value problems for neutral differential–difference equations on a finite interval $(0, d)$ can be violated and preserves only on some subintervals. However, for generalized eigenfunctions of differential–difference operators problem of smoothness remained open. We obtain the necessary and sufficient conditions of smoothness for eigenfunctions of differential–difference operators. We construct an example of differential–difference operator having a countable set of non–smooth eigenfunctions and a countable set of smooth eigenfunctions [VS23].

[VS23] R.Yu. Vorotnikov and A.L. Skubachevskii, *Smoothness of generalized eigenfunctions of differential–difference operators on a finite interval*, Mathematical Notes **114**:5 (2023), pp. 1002–1020.