

ASYMPTOTIC GENERALIZED VALUE DISTRIBUTION OF SOLUTIONS OF THE SCHRÖDINGER EQUATION

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Abstract. The theory of generalized value distribution for boundary values of Herglotz functions is applied to the Weyl-Titchmarsh m -function in Sturm-Liouville theory, and leads to a description of generalized value distribution of the logarithmic derivative $-\frac{v'}{v}$, where v is a basic solution of the Schrödinger equation.

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REFERENCES

- [1] N. I. AKHIEZER AND I. M. GLAZMAN, *Theory of Linear Operators in Hilbert space I*, Pitman, London, (1981).
- [2] S. V. BREIMESSER AND D. B. PEARSON, *Asymptotic value distribution for solutions of the Schrödinger equation*, Math. Phys., Anal. and Geom., Vol. 3, 4 (2000), p. 385–403.
- [3] Y. T. CHRISTODOULIDES AND D. B. PEARSON, *Generalized value distribution for Herglotz functions and spectral theory*, Math. Phys., Anal. and Geom., Vol. 7, 4 (2004), p. 309–331.
- [4] Y. T. CHRISTODOULIDES AND D. B. PEARSON, *Spectral theory of Herglotz functions and their compositions*, Math. Phys., Anal. and Geom., Vol. 7, 4 (2004), p. 333–345.
- [5] E. A. CODDINGTON AND N. LEVINSON, *Theory of Ordinary Differential Equations*, McGraw-Hill, New York, (1955).
- [6] G. HERGLOTZ, *Über potenzreihen mit positivem, reellem Teil in Einheitskreis*, Sächs. acad. Wiss. Leipzig, Vol. 63, (1911), p. 501–511.
- [7] D. B. PEARSON, *Value distribution and spectral theory*, Proc. Lond. Math. Soc., Vol. 68, 3 (1994), p. 127–144.
- [8] D. B. PEARSON, *Quantum Scattering and Spectral Theory*, Academic Press, London, (1988).