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Berezin transform and compact radial operators

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Abstract.

Let S be a bounded radial operator on the weighted holomorphic space $A^2_\lambda(D)$, $\lambda > -1$, and let $(\gamma_n)_{n\geqslant 0}$ be its diagonal sequence in the normalized monomial basis. The Berezin transform of S is a negative-binomial mean of (γ_n). We use this observation in two complementary Tauberian arguments to establish conditions under which compactness of radial operator is equivalent to vanishing of its Berezin transform on the boundary. We deal with slowly oscillating in the standard Schmidt sense with respect to the logarithmic metric and with the stronger condition of vanishing oscillation on every fixed multiplicative interval. We distinguish between the two logarithmic oscillation conditions and compare them with first - difference assumptions and with an earlier one - sided Tauberian condition. Explicit examples show that several of these hypotheses are incomparable.

Keywords: Berezin transform, Compact operators.