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The fixed points and hyper order of solutions of second order complex differential equations.
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Let $z_1, z_2, \ldots (r_i = |z_i|,\ 0 < r_1 \leq r_2 \leq \cdots)$ be the fixed points of a transcendental entire function. Its index for fixed points is defined as

$$\tau(f) = \inf\left\{\tau \,\middle|\, \sum_{i=1}^{\infty} \frac{1}{r_i^{\tau}} < \infty\right\}.$$

In this paper, the author studies the index of fixed points for a transcendental entire function which is a solution of a complex second order differential equation. For example, the author shows that suppose $P(z)$ is a polynomial of degree $n \geq 1$ then any non-zero solution $f(z)$ of the second order complex differential equation $f'' + P(z)f = 0$ has infinite fixed points and its index of fixed points $\tau(f) = (n+2)/2$. The index of fixed points of a solution f of the second order complex differential equation $f'' + A(z)f = 0$, where $A(z)$ is a transcendental entire function, has been investigated. Furthermore, for a second order complex differential equation $f'' + P(z)f = Q(z)$, where $P(z)$ and $Q(z)$ are polynomials, and a second order complex differential equation $f'' + A(z)f = F(z)$, the author also studies the index of fixed points for a solution f.

Reviewer: Yunping Jiang (Flushing)

MSC:

30D35 Value distribution of meromorphic functions of one complex variable, Nevanlinna theory