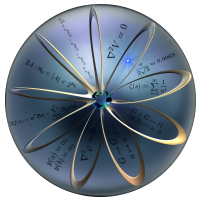

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Mittag-Leffler's theorem

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Let G be an open subset of $\mathbb{C}$, let $\{a_k\}$ be a sequence of distinct points in G which has no limit point in G. For each k, let $A_{1k}, \ldots, A_{m_k k}$ be arbitrary complex coefficients, and define

$$S_k(z) = \sum_{j=1}^{m_k} \frac{A_{jk}}{(z - a_k)^j}.$$

Then there exists a meromorphic function f on G whose poles are exactly the points $\{a_k\}$ and such that the singular part of f at a_k is $S_k(z)$, for each k.