

Boğaziçi MATH COLLOQUIUM

Real analytic and entire functions

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Abstract: . If $\mathcal{A}(\mathbb{C})$ is the ring of analytic functions of the complex plane \mathbb{C} and \mathfrak{m} is a maximal ideal of $\mathcal{A}(\mathbb{C})$ then M. Henriksen has shown that the field $\mathcal{A}(\mathbb{C})/\mathfrak{m}$ is isomorphic to \mathbb{C} .

Let now $\mathcal{A}(\mathbb{R})$ and $\mathcal{E}(\mathbb{R})$ denote respectively the ring of analytic and real entire functions in one variable. It is shown that if \mathfrak{m} is a maximal ideal of $\mathcal{A}(\mathbb{R})$, then $\mathcal{A}(\mathbb{R})/\mathfrak{m}$ is isomorphic either to the reals or a real closed field that is an η_1 -set, while if \mathfrak{m} is a maximal ideal of $\mathcal{E}(\mathbb{R})$, then $\mathcal{E}(\mathbb{R})/\mathfrak{m}$ is isomorphic to one of the latter two fields or to the field of complex numbers. Moreover, we study the residue class rings of prime ideals of these rings and their Krull dimensions. Use is made of a classical characterization of algebraically closed fields due to E. Steinitz and techniques described in L. Gillman and M. Jerison's book on rings of continuous functions.

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Time: 15:00

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