Title: Prime ideals and complex ring homomorphisms on a commutative algebra

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We give a characterization of prime ideals $\mathcal{P}$ of a commutative complex algebra $\mathcal{A}$ in order that $\mathcal{P}$ be the kernel of some complex ring homomorphism on $\mathcal{A}$. If, in addition, $\mathcal{A}$ is a uniform algebra on an infinite compact metric space, then we show that there are exactly $2^{\mathfrak{c}}$ complex ring homomorphisms on $\mathcal{A}$, whose kernels are non-maximal prime ideals. Moreover, it turns out that ring homomorphisms on a commutative Banach algebra are deeply connected with the existence of discontinuous homomorphisms.

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