

The embedding problem for complete bounded complex hypersurfaces with controlled topology

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We present some new existence results of complete bounded complex (embedded) hypersurfaces in the unit ball of \mathbb{C}^{n+1} . We have developed a conceptually new construction technique which provides some control on the topology of the hypersurface. In the case of complex curves in \mathbb{C}^2 , we can produce examples having any prescribed finite topology. In particular, we prove that the unit disc of the complex plane \mathbb{C} admits a complete proper holomorphic embedding in the unit ball of \mathbb{C}^2 .