Let $R$ be a polynomial ring over a field and $I$ an ideal generated by three forms of degree three. Motivated by Stillman’s question, Engheta in a series of 3 papers proved that the projective dimension $\text{pd}(R/I)$ is at most 36. Since the largest known example has $\text{pd}(R/I) = 5$, for several years it has been asked what is the sharp upper bound for $\text{pd}(R/I)$.

In this paper we prove $\text{pd}(R/I) \leq 5$, which, by the above, is sharp. (Received August 25, 2014)