THE MINIMAL GENUS PROBLEM IN $\mathbb{CP}^2 \# \mathbb{CP}^2$

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Abstract. We give infinite families of counterexamples and some positive examples to a conjecture on the minimal genus problem in $\mathbb{CP}^2 \# \mathbb{CP}^2$; proposed by T. Lawson.

Lawson’s Conjecture: The minimal genus of $(m, n) \in H_2(\mathbb{CP}^2 \# \mathbb{CP}^2) = H_2(\mathbb{CP}^2) \oplus H_2(\mathbb{CP}^2)$ is given by $\binom{m-1}{2} + \binom{n-1}{2}$, and it is the genus realized by the connected sum of the complex projective curves in each factor.