
On the topology and index of minimal surfaces

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For an immersed minimal surface in \mathbb{R}^3 , we show that there exists a lower bound on its Morse index that depends on the genus and number of ends, counting multiplicity. This improves, in several ways, an estimate we previously obtained bounding the genus and number of ends by the index. Our new estimate resolves several conjectures made by J. Choe and D. Hoffman concerning the classification of low-index minimal surfaces: we show that there are no complete two-sided immersed minimal surfaces in \mathbb{R}^3 of index two, complete embedded minimal surface with index three, or complete one-sided minimal immersion with index one. This is joint work with Otis Chodosh.

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