

The limiting Dirac-Sobolev inequality

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SUMMARY

We prove the critical Dirac-Sobolev inequality for $p \in (1, 3)$. It follows that the Dirac Sobolev spaces are equivalent to classical Sobolev spaces if and only if $p \in (1, 3)$. We prove the compactness of $L^{p^*}(\mathbf{R}^3)$ in $\mathbf{H}^{1,p}(\mathbf{R}^3)$. As an application, we prove the existence of minimizers to a class of isoperimetric problems.

Keywords:

AMS Classification: .

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