

Minimizers of higher order gauge invariant functionals

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We introduce higher order variants of the Yang-Mills functional that involve $(n - 2)$ th order derivatives of the curvature. We discuss coercivity up to gauge transformations, existence of Uhlenbeck gauges, existence and smoothness of minimizers in the critical dimension. A key result is a removable singularity theorem for bundles carrying a $W^{n-1,2}$ -connection. This generalizes a recent result by Pettrache and Rivière.