

On the Morse-Novikov number and the tunnel number of knots

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Abstract. Let K be a knot in the three-sphere. The Morse-Novikov number $MN(K)$ of K is the minimal number of critical points of a regular circle-valued Morse function defined on the complement of K .

We prove that $MN(K)$ is less than or equal to twice the tunnel number of the knot and present consequences of this result.