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Changfeng Gui* (changfeng.gui@utsa.edu), San Antonio, TX 78249, and **Yong Liu** and **Juncheng Wei**. *Two-end solutions to the Allen-Cahn equation in the three dimensional Euclidean space.*

In this paper, we study axially symmetric solutions of Allen-Cahn equation in the three dimensional Euclidean space. Using a sophisticated continuation method, we show the existence of a complete family of axially symmetric solutions with a range of logarithmic growth rates, which may be regarded as the analogue of the family of catenoids and hence called two-end solutions. Nonexistence of two-end solution with a small growth rate is also shown, which differs from the theory of minimal surfaces. (Received September 07, 2017)