

# RADIAL SYMMETRY OF ENTIRE SOLUTIONS OF A BI-HARMONIC EQUATION WITH EXPONENTIAL NONLINEARITY

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ABSTRACT. We obtain necessary and sufficient conditions for an entire solution  $u$  of a biharmonic equation with exponential nonlinearity  $e^u$  to be a radially symmetric solution. The standard tool to obtain the radial symmetry for a system of equations is the Moving-Plane-Method (MPM). In order to apply the MPM, we need to know the asymptotic expansions of  $u$  and  $-\Delta u$  at  $\infty$ . We overcome the difficulties due to the fact that  $e^u$  is supercritical for  $N \geq 5$ ,  $e^u \notin L^{\frac{N}{4}}(\mathbb{R}^N)$ , and to get the right decay rate of  $u$  and  $-\Delta u$  at  $\infty$  in order to start the moving plane procedure.

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