

## **"Singularly perturbed elliptic equations with solutions concentrating on a 1-dimensional orbit"**

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Abstract: We consider a singularly perturbed elliptic equation with superlinear nonlinearity on an annulus in  $\mathbb{R}^4$  and look for solutions which are invariant under a fixed point free 1-parameter group action. We show that this problem can be reduced to a non-homogeneous equation on a related annulus in dimension 3. The ground state solutions of this equation are single peaked solutions which concentrate near the inner boundary. Transforming back, these solutions produce a family of solutions which concentrate along the orbit of the group action near the inner boundary of the domain.