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## Connectedness of moment maps on based loop groups

Lisa Jeffrey  
*Department of Mathematics*  
*University of Toronto*  
*BCIT, 40 St George St, 6th floor*  
*Toronto (Ontario), M5S 2E4*  
*CANADA*

`jeffrey@math.toronto.edu`

### Abstract

If  $G$  is a compact connected simply connected Lie group, the loop group  $LG$  is the collection of maps from the unit circle to  $G$ . The space of based loops is a homogeneous space of  $LG$  and has a natural action of  $T \times S^1$  where  $T$  is the maximal torus of  $G$ .

Atiyah and Pressley proved that the image of this moment map is convex. Their proof did not follow the structure of the proof of the convexity theorem for moment maps of torus actions on symplectic manifolds (Atiyah; Guillemin–Sternberg), where a key step is to prove that level sets of the moment map are connected. In this talk I outline our proof that in this situation the level sets are indeed connected.

**Joint work with Megumi Harada, Tara Holm and Liviu Mare.**