Stability analysis of Yang-Mills equations in four and six dimensions.

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We present a complete stability analysis of the gauge field fluctuations in the neighborhood of the rotating ellipsoidal solution of Yang-Mills equations. This solution also describe the D2-D0-branes. Initially only perturbations that do not modify the original $SU(2)$ solution was analyzed. Now this analysis is extended to the case when perturbations are in the full $SU(N)$ algebra directions. The results indicate that in the case of $SU(2)$ most of the modes display the enhanced symmetry of the original solution, *i.e.* the additional degrees of freedom are zero-modes. This means that the rotating ellipsoidal solution is in fact the most general solution that can be constructed out of an $SU(2)$, independently of the dimension of space. In the full $SU(N)$ case there are exactly $N^2 + 12$ zero-modes, of which $N^2 - 1$ are the consequence of the global color rotation symmetry of the solution, and 6 are associated with global space rotations. All the other modes, for the totality of all possible gauge field perturbations in $SU(N)$, are completely stable and execute harmonic oscillations around the original trajectories.