OPEN PROBLEMS: RICCI YANG-MILLS SOLITONS ON NILPOTENT LIE GROUPS

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(1) Is there a general condition on the bundle curvature that will guarantee long-time existence and convergence of the Ricci Yang-Mills flow to an Einstein Yang-Mills metric?

(2) Is the Ricci Yang-Mills flow stable at Einstein Yang-Mills metrics in dimensions higher than 2?

(3) What can be said about existence/convergence/stability/solitons in the case of $G$ non-abelian?

(4) Can we provide a classification of RYM solitons on $k$-step nilpotent Lie groups for a general $k$?

(5) Can we classify RYM solitons on other homogeneous bundles?

(6) Do Ricci-Yang Mills solitons on nilpotent Lie groups have a natural extension to a special metric on a solvable Lie group?