1012-22-100 **Shrawan Kumar*** (shrawan@email.unc.edu), Department of Mathematics, UNC at Chapel Hill, Chapel Hill, NC 27599-3250. *On Cachazo-Douglas-Seiberg-Witten conjecture for simple Lie algebras.* Preliminary report.

Let g be a simple Lie algebra over the complex numbers. Consider the exterior algebra $R := \wedge(g \oplus g)$ on two copies of g. There are three 'standard' copies of the adjoint representation g in the degree 2 component R^2. Let J be the (bigraded) ideal of R generated by the three copies C_1, C_2, C_3 of g (in R^2) and define the bigraded g-algebra $A := R/J$. The Killing form gives rise to a g-invariant $S \in A^{1,1}$.

Motivated by supersymmetric gauge theory, Cachazo-Douglas-Seiberg-Witten made the following conjecture.

(i) The subalgebra A^g of g-invariants in A is generated, as an algebra, by the element S.

(ii) $S^h = 0$.

(iii) $S^{h-1} \neq 0$, where h is the dual Coxeter number.

The aim of this work is to give a uniform proof of the above conjecture part (i). In addition, we give a conjecture, the validity of which would imply part (ii) of the above conjecture. (Received September 12, 2005)