Title: Annihilators on co-commutators with generalized derivations on Lie ideals

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Let R be a prime ring of characteristic different from 2, U the Utumi quotient ring of R, $C = Z(U)$ the extended centroid of R, L a non-central Lie ideal of R, H and G non-zero generalized derivations of R. Suppose that there exists $0 \neq a \in R$ such that $a(H(u)u - uG(u)) = 0$, for all $u \in L$, then one of the following holds:

(1) there exist $b', c' \in U$ such that $H(x) = b'x + xc'$, $G(x) = c'x$ with $ab' = 0$;

(2) R satisfies s_4 and there exist $b', c', q' \in U$ such that $H(x) = b'x + xc'$, $G(x) = c'x + xq'$, with $a(b' - q') = 0$.

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