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**Ronnie Lee\*** ([rlee@math.yale.edu](mailto:rlee@math.yale.edu)), Department of Mathematics, Yale University, 10 Hillhouse Avenue, New Haven, CT 06520-8283. *A perturbative  $SU(3)$  Casson invariant.* Preliminary report.

A perturbative  $SU(3)$  Casson invariant  $\Lambda_{SU(3)}(X)$  for integral homology 3-sphere is defined. Besides being fully perturbative, it has the nice properties: (1)  $4\Lambda_{SU(3)}$  is an integer. (2) It is preserved under orientation change. (3) A connect sum formula. Explicit calculations of the invariant for  $1/k$  surgery of  $(2, q)$  torus knot have been made and compared with a different Boden-Herald's  $SU(3)$  generalization of Casson invariant. For those cases computed, the invariant defined here is a quadratic polynomial in  $k$  for  $k > 0$  and a different quadratic polynomial for  $k < 0$  (Received September 17, 2000)