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Duane K. Allen* (duane.allen@navy.mil), NSWC Corona Division (RA 14), P.O. Box 5000, Corona, CA 92507-3132. *A Partial Differential Operator for Boolean Expressions*. Preliminary report.

We define a partial differential operator for Boolean expressions. The operator maps a Boolean expression of n variables into $2n$ partial differential coefficients, n of which are for "in-phase" relationships and n for "opposite phase." Applications include the generation of test vectors for tests of combinatorial digital logic and the simplification of digital logic design. (Received December 30, 2009)