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William P Fox* (wpfox@nps.edu), 2977 Sloat Road, Pebble Beach, CA 93953. *New Metrics to Detect Suicide Bombers.*

We examined the use of radar to detect humans at a stand off distance of approximately two to eight meters wearing detonation wires as part of a suicide bombing vest. We used the GunnPlexer Doppler radar at 12.5 GHz to collect experiment data of humans without wires, with wires, and wires with a simulated vest. We performed experiments with the subjects walking and collected data on the radar cross section backscatter. We examined the data as well as both the horizontal and the vertical polarization (HH and VV). We developed several simple metrics using the polarization data from this data that could be used in building models to more accurately detect subjects wearing wires. Through more analysis, we discovered additional information about the data and created more useful metrics and combinations of metrics that could be used to increase the detection probability. We used Monte Carlo simulation to test our theories. To date through modeling, we have a success rate over 98% and a false positive rate of under approximately 2%. This research and the results encourage one to think that suicide bombers can be found prior to their detonation of their bombs at a safe range. (Received September 06, 2011)