

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Spin and Parity of the Higgs Boson in the $H \rightarrow b\bar{b}$ Decay Channel
at D0 EMILY JOHNSON, Michigan State University, D0 COLLABORATION —
We present constraints on the 125 GeV boson spin J and parity P in the $H \rightarrow b\bar{b}$ decay channel in up to 9.7 fb^{-1} of data collected by the D0 detector. We compare the standard model (SM) prediction of $J^P = 0^+$ with two alternative hypotheses, $J^P = 0^-$ and $J^P = 2^+$, in the $ZH \rightarrow \ell\ell b\bar{b}$, $WH \rightarrow \ell\nu b\bar{b}$, and $ZH \rightarrow \nu\nu b\bar{b}$ final states. To distinguish different Higgs boson J^P states we use the invariant mass of the VH system, which is sensitive to the different kinematics of the J^P states. We use a likelihood ratio to quantify the level of preference in data for the $J^P = 0^+$ SM prediction. This presentation will describe the methodology and present the latest results.

Robert Hirosky
University of Virginia

Date submitted: 10 Jan 2014

Electronic form version 1.4