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Measuring the mass of the Higgs Boson at the ATLAS detector in the $H \rightarrow ZZ^* \rightarrow 4l$ channel using an analytic model

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Progress on the development of an analytic signal model for measuring the mass of the Higgs Boson employing the $H \rightarrow ZZ \rightarrow 4l$ ($l=e, \mu$) channel is presented. The model consists of a double-sided Crystal ball function, which is a function with a Gaussian core and power-law tails. The model is fitted to the four-lepton invariant mass distribution of $H \rightarrow ZZ \rightarrow 4l$ signal Monte Carlo samples. Results from closure tests and performance of the model at expected statistics are also shown.

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