



# Weekly report

Abdualazem Fadol

April 27, 2020



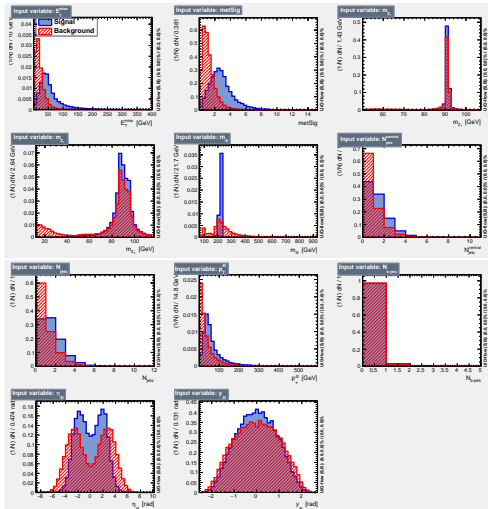
INSTITUTE FOR  
COLLIDER  
PARTICLE  
PHYSICS



UNIVERSITY OF THE WITWATERSRAND

# $R \rightarrow SH \rightarrow 4l + E_{\text{T}}^{\text{miss}}$

TMVA: Input variables

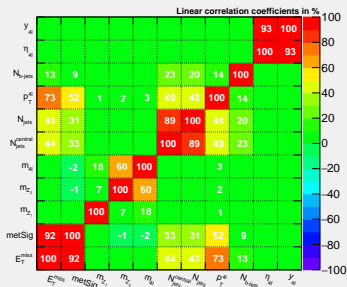


$$R \rightarrow SH \rightarrow 4\ell + E_T^{\text{miss}}$$

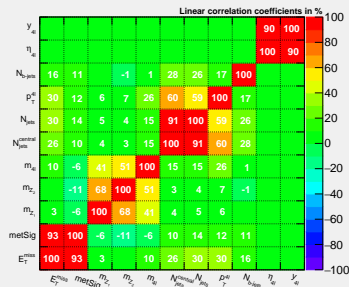
TMVA:Correlation Matrix



Correlation Matrix (signal)

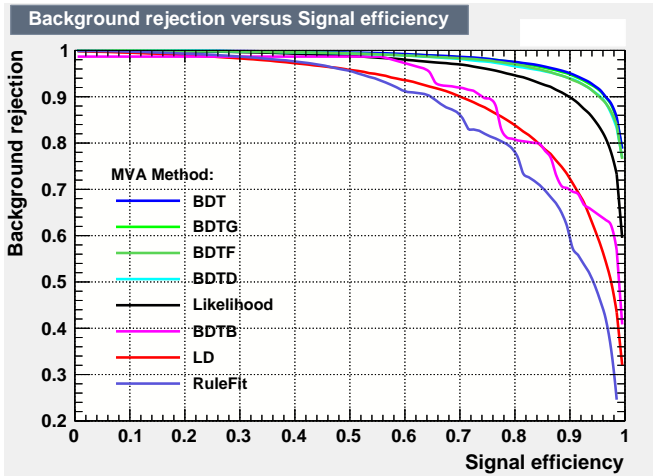


Correlation Matrix (background)



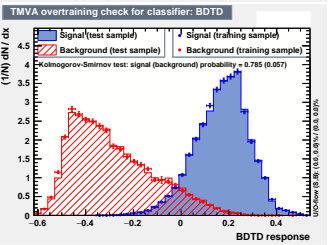
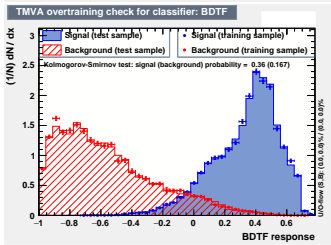
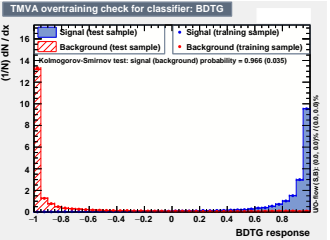
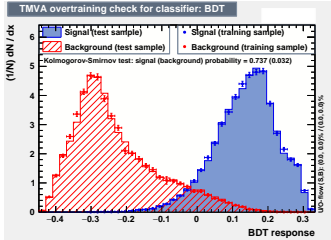
$$R \rightarrow SH \rightarrow 4l + E_T^{\text{miss}}$$

TMVA:ROC curve



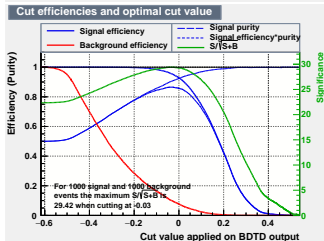
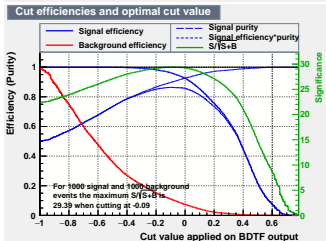
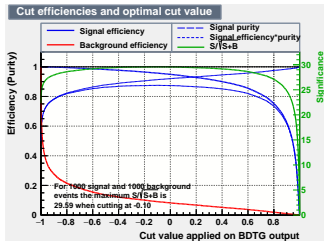
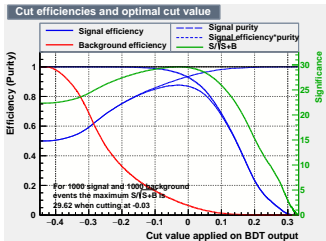
# $R \rightarrow SH \rightarrow 4l + E_{\text{T}}^{\text{miss}}$

TMVA: Over-training checks



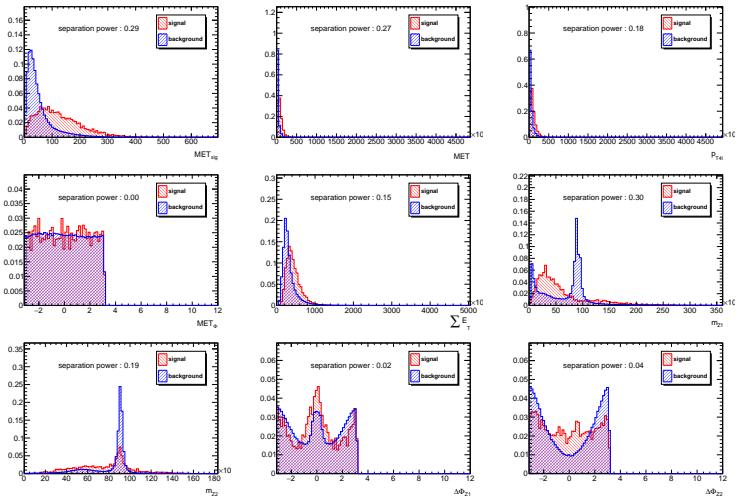
# $R \rightarrow SH \rightarrow 4l + E_T^{\text{miss}}$

TMVA: Efficiency and optimal cuts



# DiHiggs to $4\ell$ -lepton analysis

## ML: Input variables

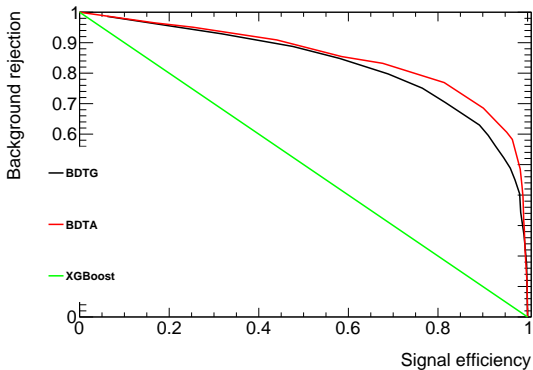






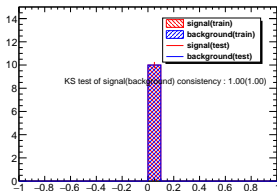
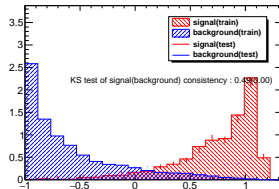
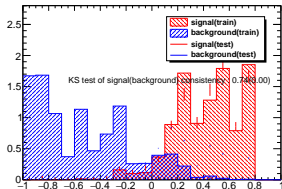
# DiHiggs to $4\ell$ -lepton analysis

ML: ROC curve



# DiHiggs to $4\ell$ -lepton analysis

ML: Over-training checks





**Thank you!**

