

Precision Simulations and Uncertainties

for HH production and WBS

Frank Krauss

Institute for Data Science
Institute for Particle Physics Phenomenology

Durham University



goals of the project

- **provision of state-of-the-art simulations for HH production and WBS, including NLO QCD & EW**
- **use HH + backgrounds to systematically include theory uncertainties (scales) in ML tools**
 - **scale uncertainties are correlated on an event-by-event basis**
 - **events have weight vector (one entry per scale choice), capture them in *one* ML run**