

# Physics Analysis Tools Meeting

## H $\rightarrow$ 4 leptons using AOD

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# Introduction

- Encapsulate in the analysis object the basic information about a physics entity
- Allow enough flexibility for different level of identification
- Create AOD from basic cuts on ESD objects
- Include enough information for the user to tighten cut if higher level of identification required
- Allow navigation to the parent ESD object

# BNL Implementation of AOD Classes

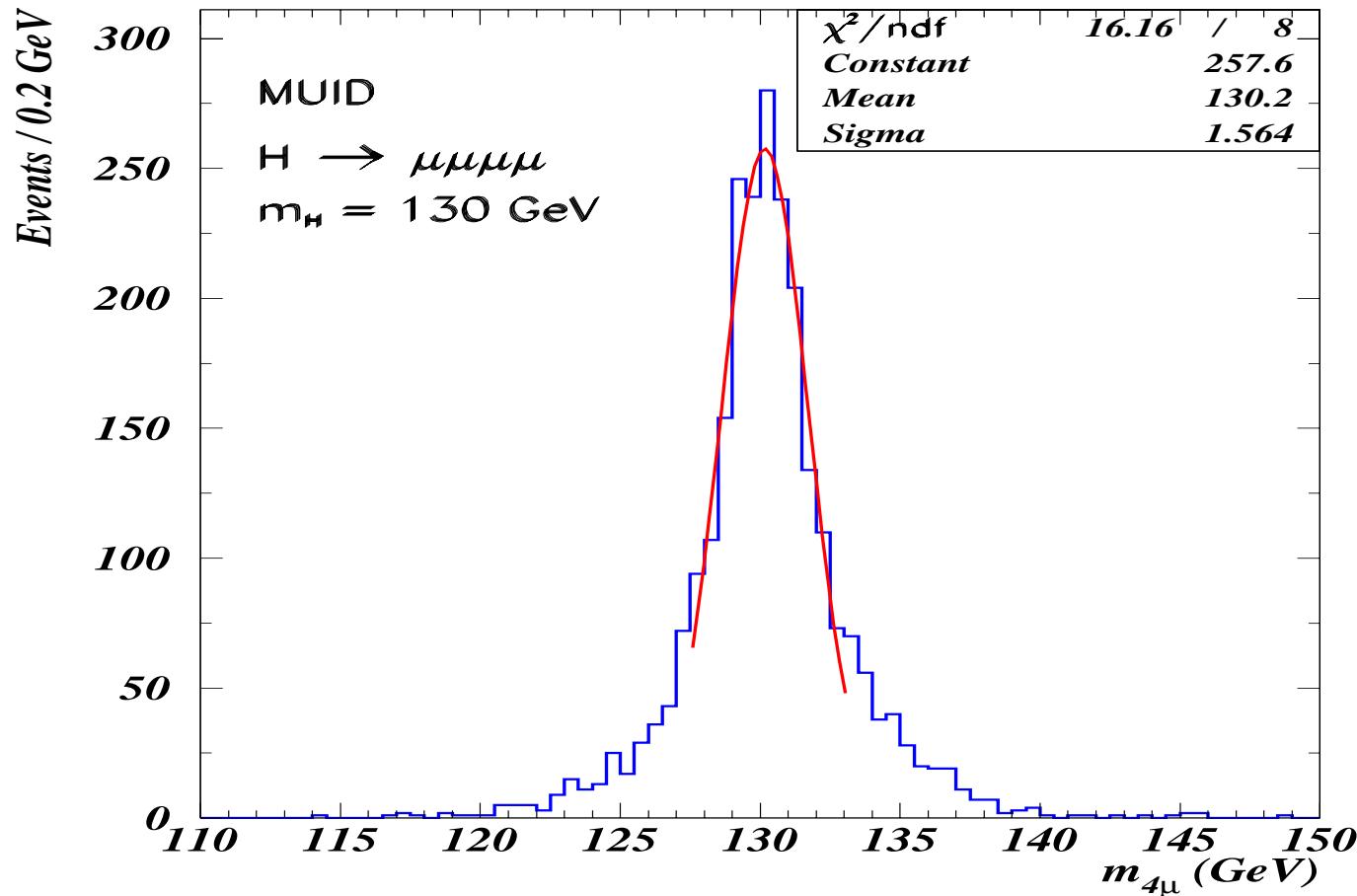
- **AODEvent : package contains data classes**
  - **AODbase.h provides a uniform interface similar to Artemis**
  - **AOD objects such AODelectron.h, muon, etc, inherits from AODbase.h, holds a pointer to the parent e/gamma, muon, etc object, and some basic variables which identifies the AOD as such.**  
**A method “bool accept()” for default acceptance cuts base on the SUSY analysis --- not very tight**
  - **Container class: DataVector<AOD object>**

# BNL Implementation of AOD Classes

- **AODAthenaPool** : package contains POOL converters to persistify AOD
- **AODUtils** : package contains utility classes such  $\Delta R$ , matching a reconstructed object to an MC truth object, invariant mass calculations, etc
- **AODAnalysis**: package contains algorithms for user specific analysis, SUSY,  $H \rightarrow 4l$ , etc.
- See Frank Paige's talk at the Physics Validation meeting, Feb 4, 2004 for details

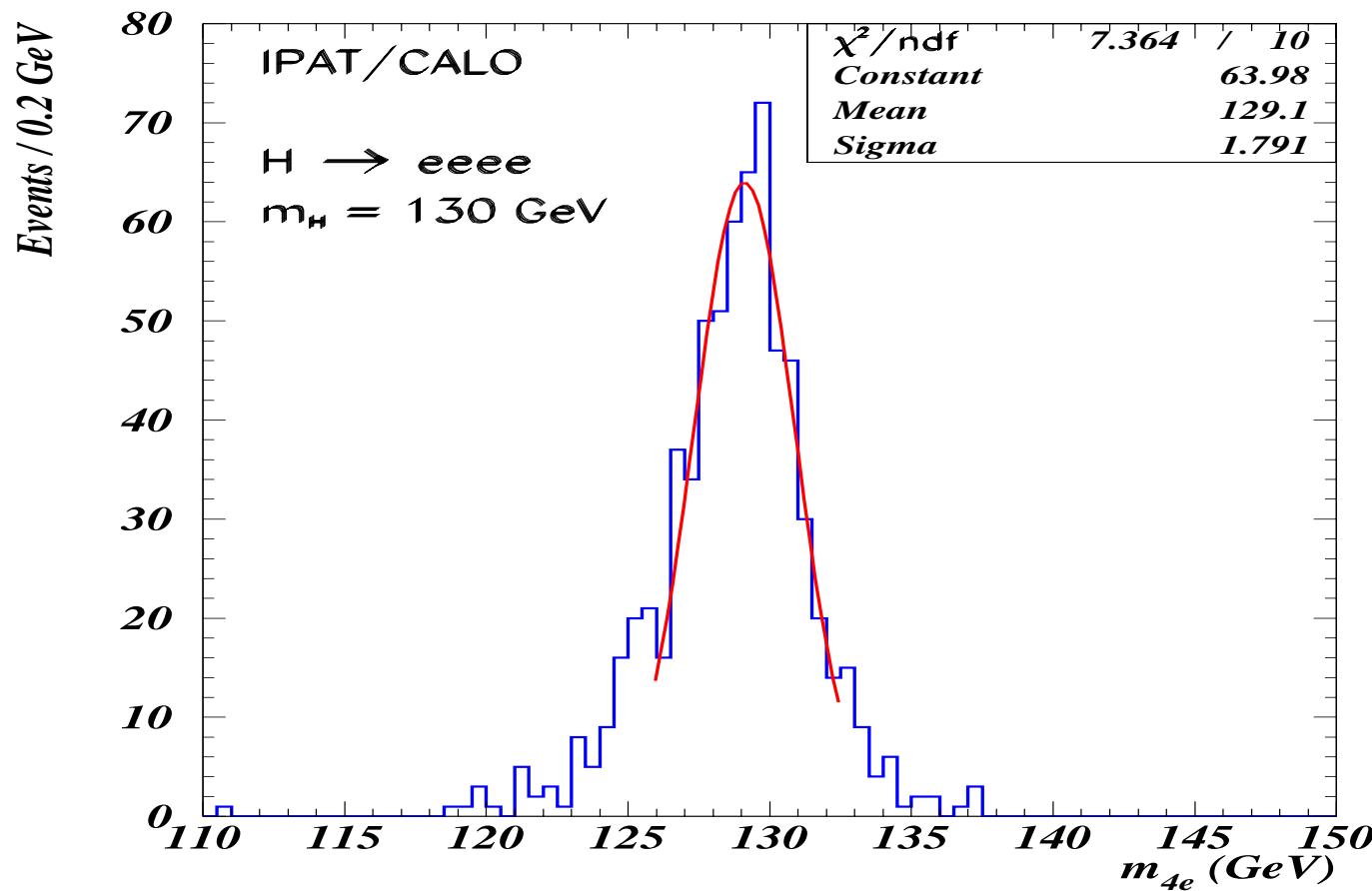
# H $\rightarrow$ 4 $\mu$ Analysis at BNL

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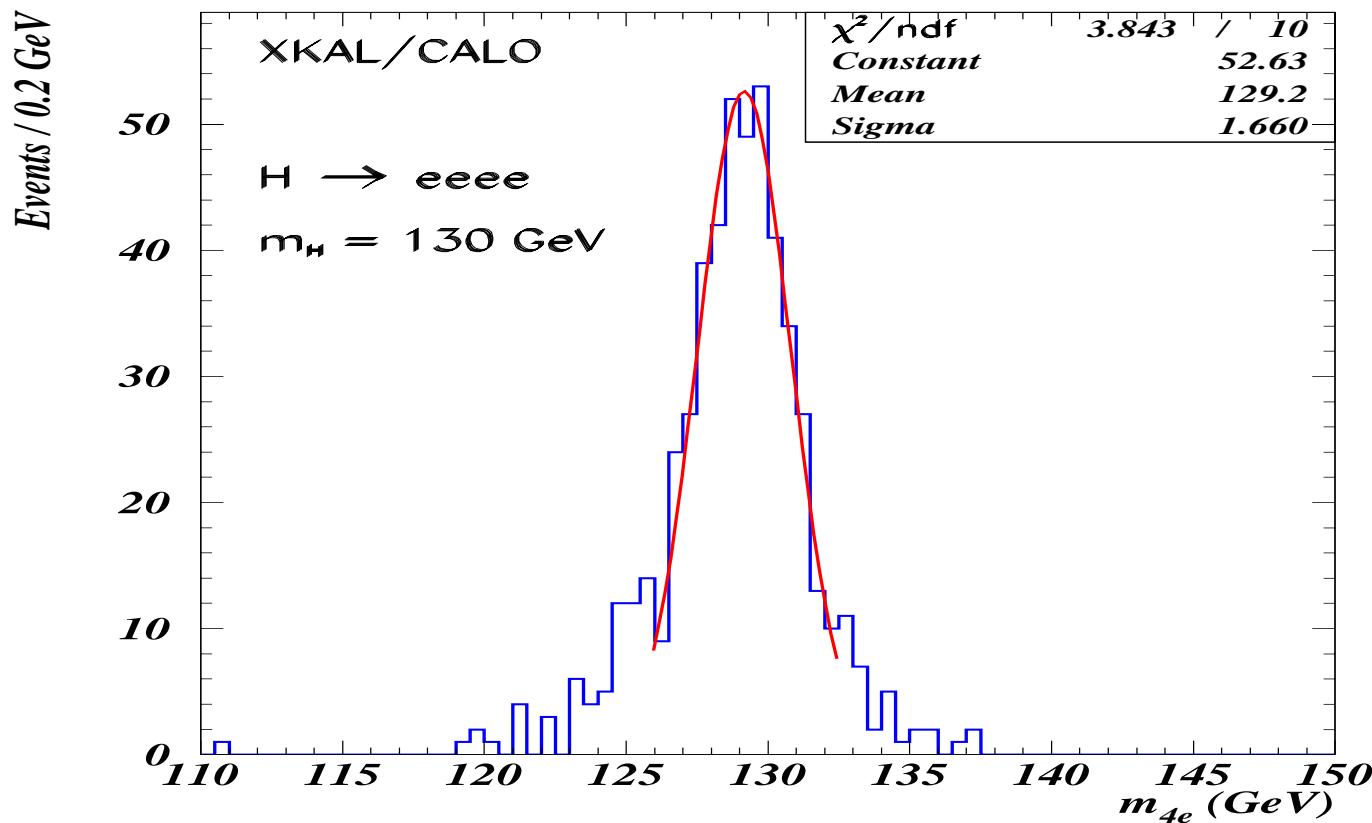
# H $\rightarrow$ 4e Analysis at BNL

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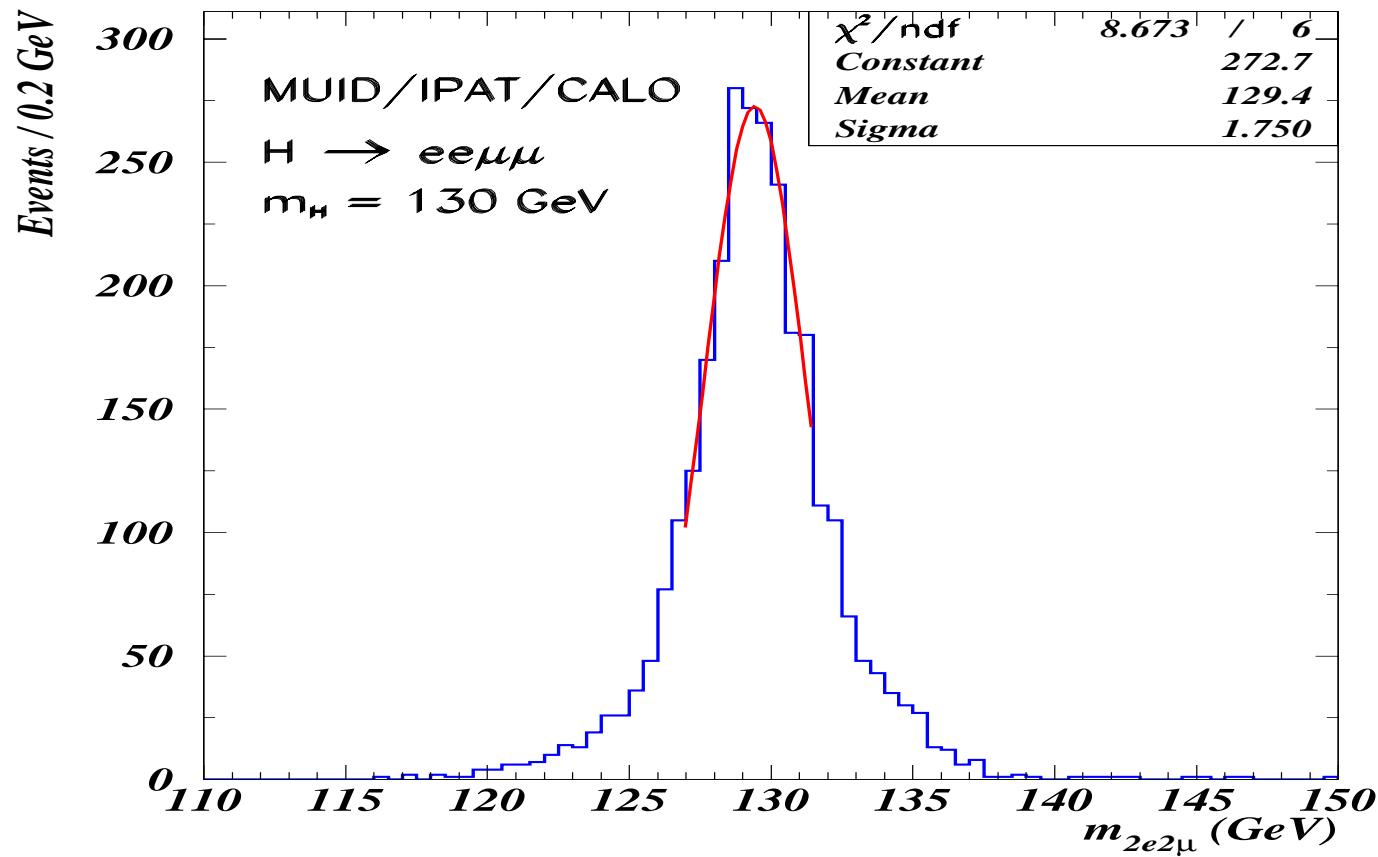
# H $\rightarrow$ 4e Analysis at BNL

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# H $\rightarrow$ 2e2 $\mu$ Analysis at BNL

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# H $\rightarrow$ 4l Analyses with AOD

Analyses use cases:

- Redo the H $\rightarrow$ 4l analyses using persistified AOD. In progress. Expect results for comparison by the software week
- Demonstrate the above in a distributed environment (See D. Adams' talk in this meeting)
- SUSY analyses using persistified AOD is also in progress (F. Paige).