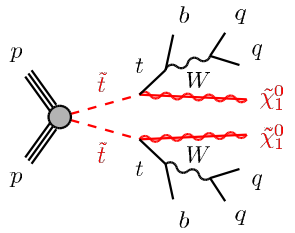
Max, Stop, ATLAS, Fast Electronics

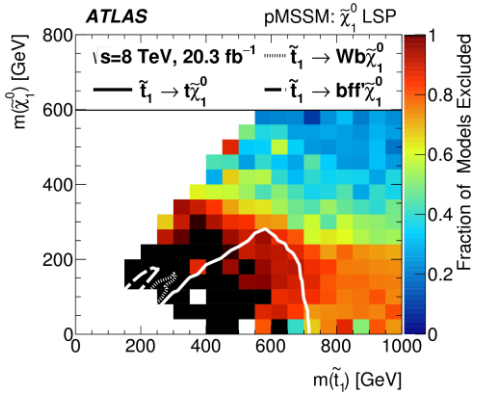
FH Fellow Meeting

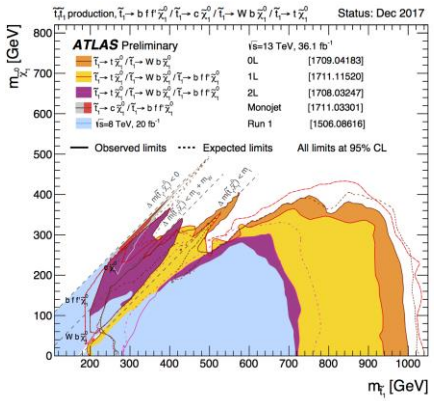
About Me

Background, past activities

- The legal name read: “chao-wa-road” “wa-no-ta-ya-road”
  - Thai is a language with the usage of tones, similar to Chinese
  - “Max” is an “official” nickname
- Born in Krabi, Thailand. Finished middle school there
- High school in (closed to) Bangkok
- Bachelor/Master/PhD at University of Oregon in Eugene
  - PhD: Stop 0 lepton search



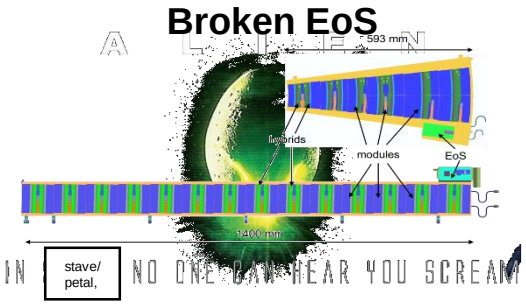


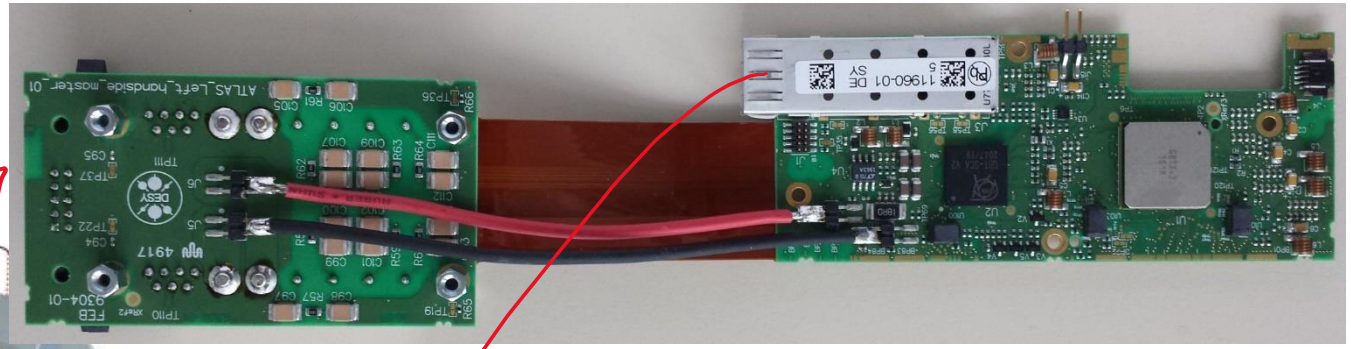


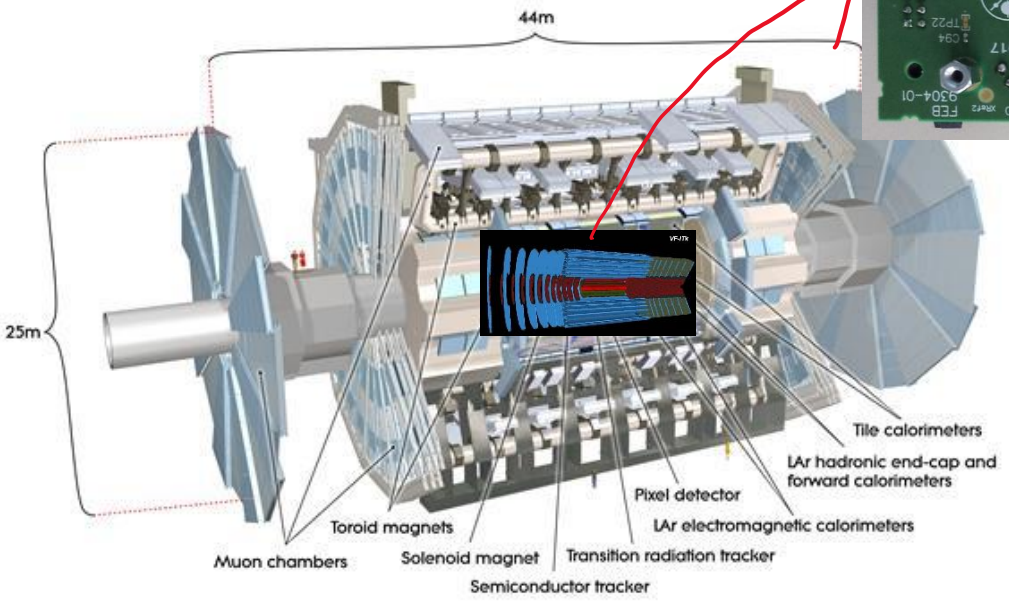
My Current Work

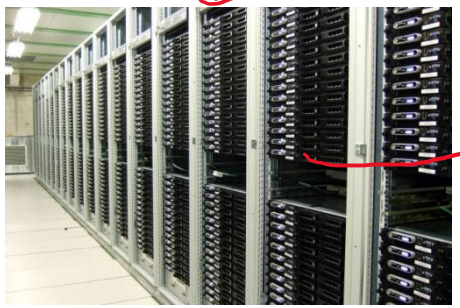
Activities and challenges

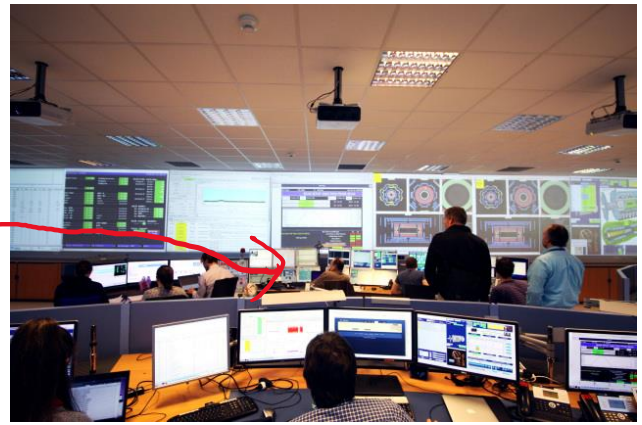
- Designing and testing the reliability of the high-speed link of the new ATLAS inner tracker (to be installed ~2025)
- ~10 GB/s communication in high radiation environment is not easy
- The board is a single point of failure – if it breaks, we lose a whole lot of sensors











My Favourite Plot

- Two top quarks and large invisible momentum is the signature
- Each top quark produces three jets
- We developed a new top reconstruction method…
- …but there are two types of event
  1. Two tops well separated
  2. Two tops on top of each other
- I came up with a new variable “mass asymmetry” to separate them so we can treat them differently

$$\mathcal{A}_{\mathrm{m_{top}}} = Abs\left(\frac{m^0_{AkT12} - m^1_{AkT12}}{m^0_{AkT12} + m^1_{AkT12}}\right)$$

- Somewhat of a love/hate relationship with this – tried many other algorithm, never quite beat it