

# Progress Report

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# Outline

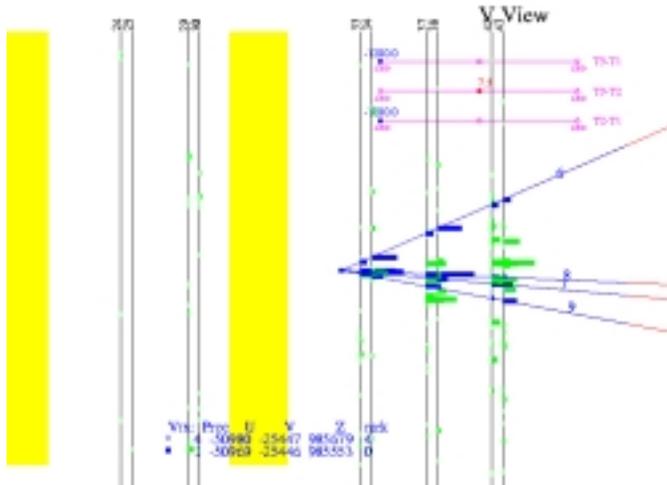
- **Status of Phase 2 Located events**
- **ANN for tau CC - NC scattering interactions**
- **On - going work**

# Status of Phase 2 located events

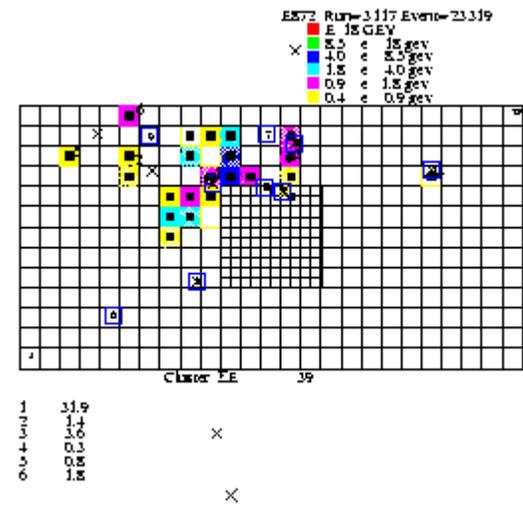
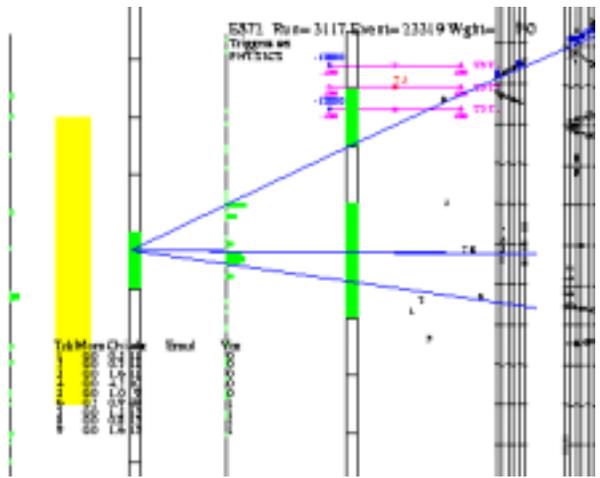
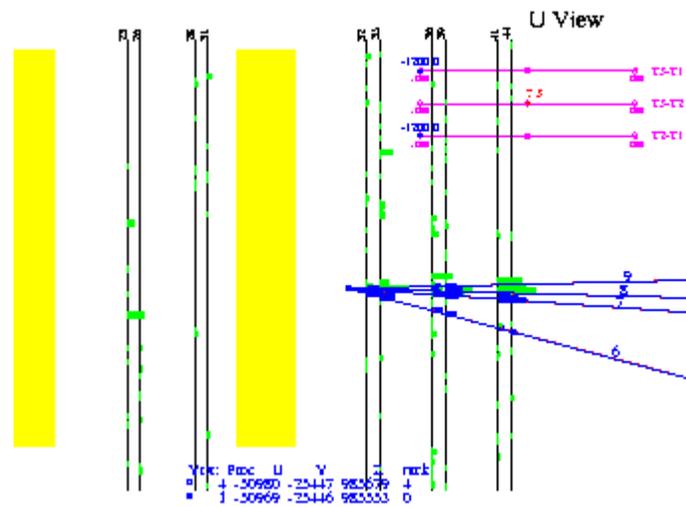
- Created a list with the status of all phase 2 “located” events.  
( file : located\_status\_phase2\_fin.txt)
- **From the 227 “located” events:**
  - **44 cannot be located by me or Bruce.**
  - **8 have only one primary track**
- 38 of the 44 not located events are characterized as ns pour.
- In the events with one primary track, this track has momentum greater than 2 GeV and there is a good match with an emulsion track. ( Info from Bruce)

# An interaction in T2 ?

E872 Run= 3117 Event= 23319 Wght= 1.0



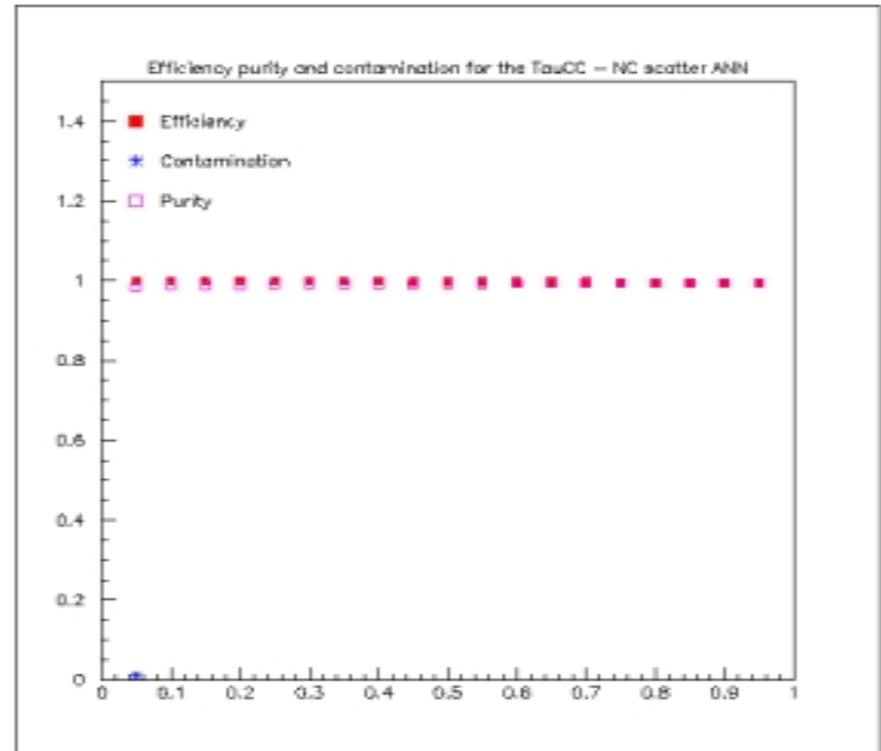
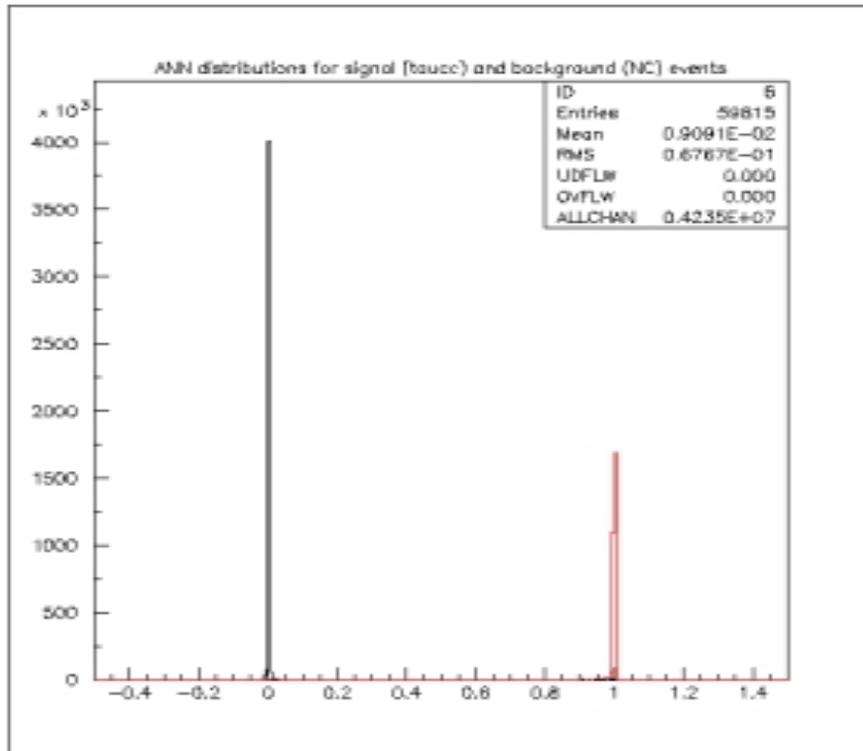
E872 Run= 3117 Event= 23319 Wght= 1.0



# ANN for tau CC - NC scattering

- **Goal** : To separate tau CC interactions from NC scattering interactions with the use of ANNs
- **Input Variables** :
  - Daughter Momentum
  - Parent flight
  - Parent angle
  - Daughter angle
- **Training Set** : ( Used the Ntuples provided by Vittorio and created by Byron & Jason (?))
  - 20000 Tau CC interactions
  - 20000 NC scattering interactions

# ANN for tau CC - NC scattering cont.



- The performance of the ANN is almost perfect since we can achieve  $> 99\%$  efficiency and  $> 99\%$  purity.*

# ANN Test on the 4 tau CC events.

- So far we have examined the ANN performance on the 4 tau CC events:

| Event      | Daughter Momentum | Daughter Angle | Parent Angle | Parent flight      | ANN Probability |
|------------|-------------------|----------------|--------------|--------------------|-----------------|
| 3039_01910 | 4.6 GeV           | 0.0900 rad     | 0.0626 rad   | 280 $\mu\text{m}$  | 1.0000          |
| 3024_30175 | 2.9 GeV           | 0.0900 rad     | 0.0268 rad   | 4604 $\mu\text{m}$ | 0.9977          |
| 3263_25102 | 1.9 GeV           | 0.1187 rad     | 0.1772 rad   | 1947 $\mu\text{m}$ | 0.9948          |
| 3333_17665 | 21.4 GeV          | 0.0133 rad     | 0.0164 rad   | 564 $\mu\text{m}$  | 1.0000          |

- We would like to perform the same test on all Phase I kinks. For that we need the above four parameters for all the kinks.

## On going work

- We are attempting Event Location & Decay search on every new data set that is released by Nonaka.
- So far we have send two kink candidates to Japan but have not received an answer yet.
- We would like to test the ANN performance on all Phase I kinks and for that we need a list with the previous four parameters for every kink.