

Scan Status

- Only Net scan method used for now
- scan event subset based on Okada's criteria
- Period 4 events scanning "done"
- Period 3 events "done" in ~3 weeks

	Period 1	Period 2	Period 3	Period 4	Totals
<u>scanned</u> located	21 / 31	13 / 27	[0 / 43]	110 / 230	144 / 288*
refit			54	113	154
located, but not refit				19	19

* Period 3 data not included

- ◆ One UTS-equipped machine; total scan throughput of 2.5 events/day.
- ◆ Location is lagging behind scanning, due to increasing allowed track angle to 0.4 radians.
- ◆ Decay search lagging behind location; only Period 1 & 2 are "done".

Analysis Schedule at Nagoya

- Second UTS machine ~1 week, 4 - 5 ev d⁻¹
- 1st scan done for Okada set ~4 weeks
- Add more events from Period 3 & 4
- Rescan events not found (P4)
- Third UTS ~July
- **Net scan of CHORUS ; $\geq 100K$ events**
- Use $10 \times 10\text{mm}^2 \times 20$ plate scan volume

Analysis Tasks

Nagoya

- complete emulsion calibration and tests
- fix data "overflow" in m files
- allow segment linking to "jump" gaps
- estimate scan volumes for not located events

Others

- refit events (esp. P4 CS9); add events to scan
- provide m file calibration
- develop code for locating events
- develop code for decay search
- provide data file organization

Event Selection for Net Scan

Purpose: to create a set of events that can be scanned within the volume limitations of : 5 mm × 5 mm × 20 plates (max) and average > 2 events per day.

Method: Okada examines each cat3 event (by eye) and assigns it to essentially one of three categories:

- 1 - Event OK for scanning now*
- 2 - Defer scanning for now*
- 3 - Reject from scan set*

Comments:

Events can be assigned different z ranges, from 10 plates ($\pm 5\text{mm}$) to 20 plates ($\pm 10\text{mm}$).

Events can be deferred if the vertex uncertainty is large or there are <3 primary tracks with angles < 400 mrad.

Events are rejected if the vertex is within 1.5cm of the emulsion edge, or if the event does not appear to be a neutrino interaction

Efficiency of selecting of ν_τ interactions in scan set

Okada classified 52 events from a MC data sample that contained mostly ν_τ interactions. The sum of the event weights was used to compile the results of this study.

	Total	Triggers	Tot. Wgt	Trig. Wgt.	1- in Scan Set	2- deferred	3 - rejected
ν_τ	48	43	8000	7929	3502	3714	713
ν_e	2	2	334	334	334	0	0
ν_μ	5	4	426	404	111	293	0
NC	5	3	620	609	0	603	6
Σ	60	52	9381	9277	3947	4610	719

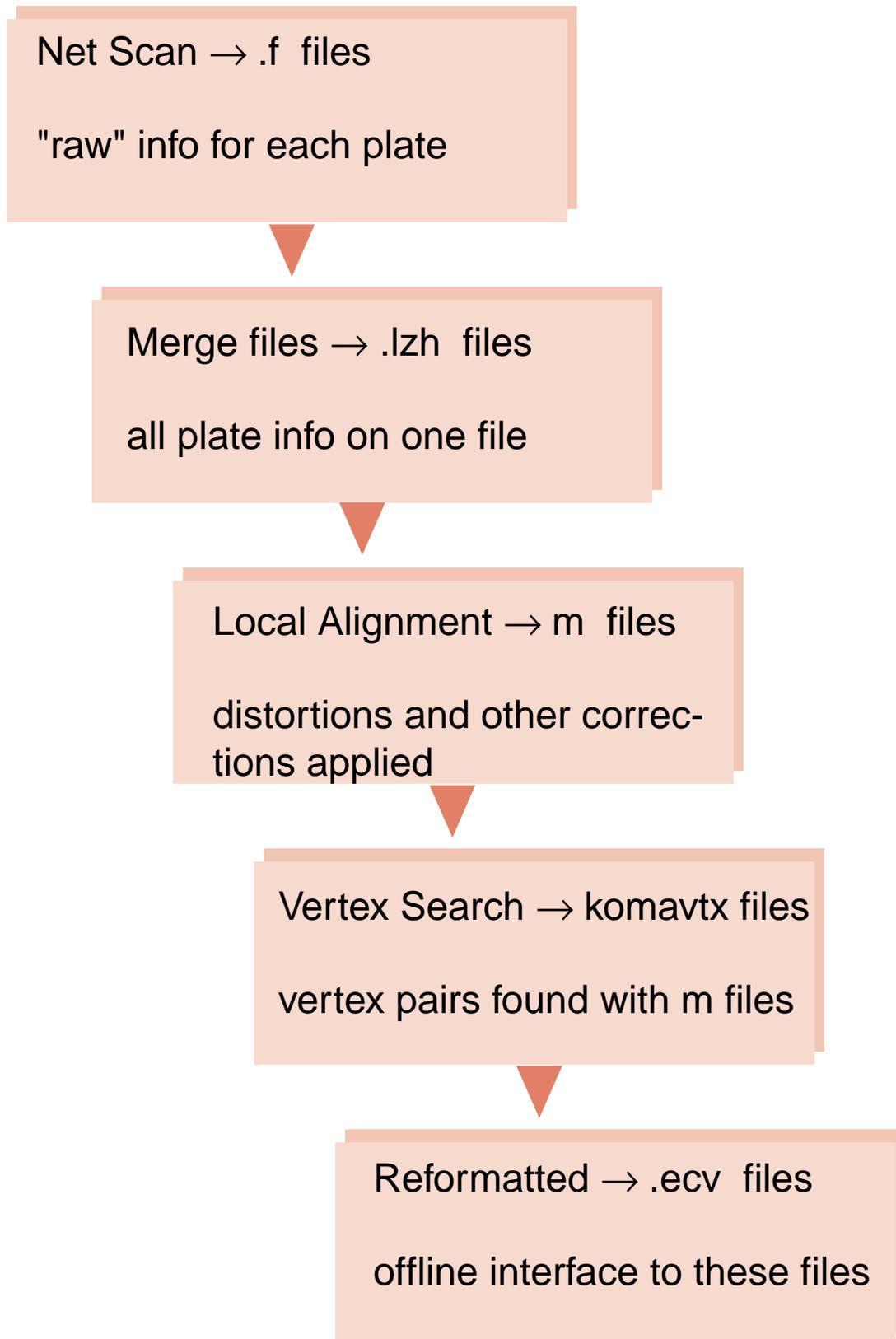
All numbers within the yellow box are event weights

44% of the τ events were accepted for scanning now

47% of the τ events were deferred

9% of the τ events were rejected

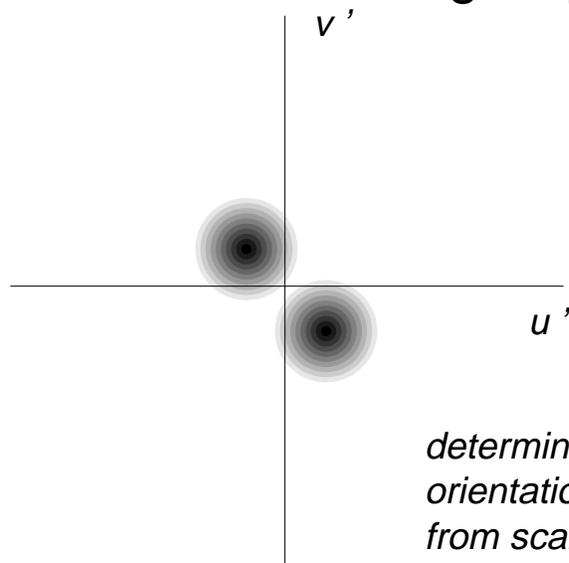
Net Scan Data Processing Flow



Emulsion Data Alignment

- The m file track segments and SFT do *not* have the same coordinate system
- Three parameters need to be determined for *every* m file; u' , v' , and z scale
- The actual muon distribution is a function of u and v
- We need to use the T1•T3 muons to get the relative offsets

recall muon distribution in angle space:



Summary

Maximize τ sample \Rightarrow locating all events that have high probability of being located in $5 \times 5 \text{mm}^2 \times 20$ plate volume

- *good vertex predictions*
- *re-scan not located events*
- *attempt refit of all P3 and P4 events*

Assume responsibility for event location (US-side)

- *match emulsion to SFT coordinates*
- *find the right emulsion vertex*

Must have results by September