

Progress and future prospect of the CRAFFT project for the next generation UHECR observation

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1. What is this contribution about?

CRAFFT project is developing a low cost fluorescence detector (FD) to realize a huge observatory for ultra high energy cosmic ray (UHECR) observation.

2. Why is it relevant / interesting?

It is expected that we will be able to identify the sources of UHECRs because of the straight propagation with such high energy. We need a large detection area for a large statistics because of the low flux of UHECR and it is inevitable to reduce the cost to realize the next generation observatory with a large detection area.

3. What have we done?

We developed the low cost FD resultant to the cost to be 1/10 of conventional FDs.

4. What is the result?

We succeeded to detect UHECR air showers, and we demonstrated the possibility of reconstruction with the low cost FD even with single pixel by waveform fitting.



Fig1. Exterior of CRAFFT detector which consists of Fresnel lens, UV trans. Filter, 8 inc. PMT, FADC.

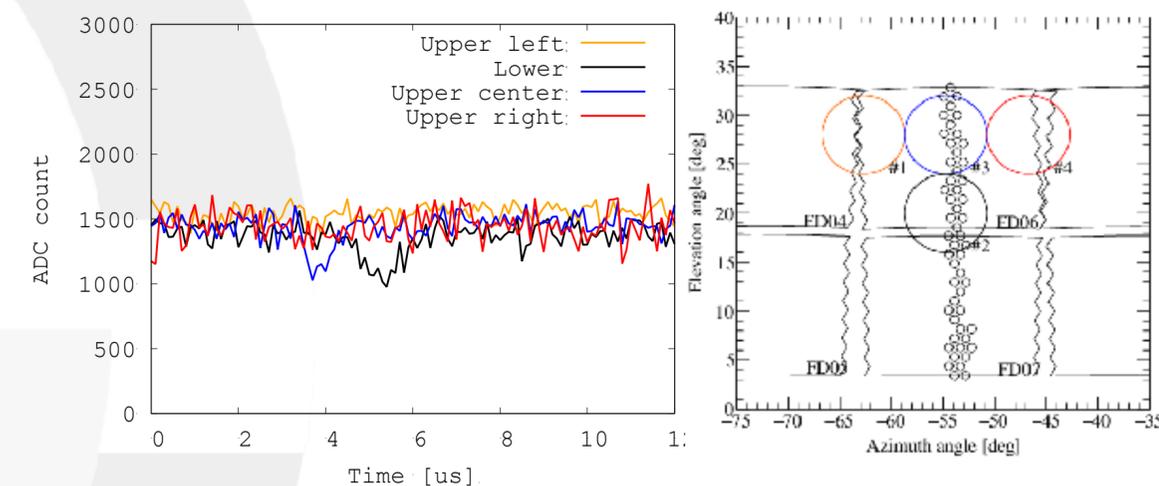


Fig2. Air shower event detected by CRAFFT at TA site. ($E=10^{17.7}$ eV, 3.6 km apart from the detector analyzed by TA FD)

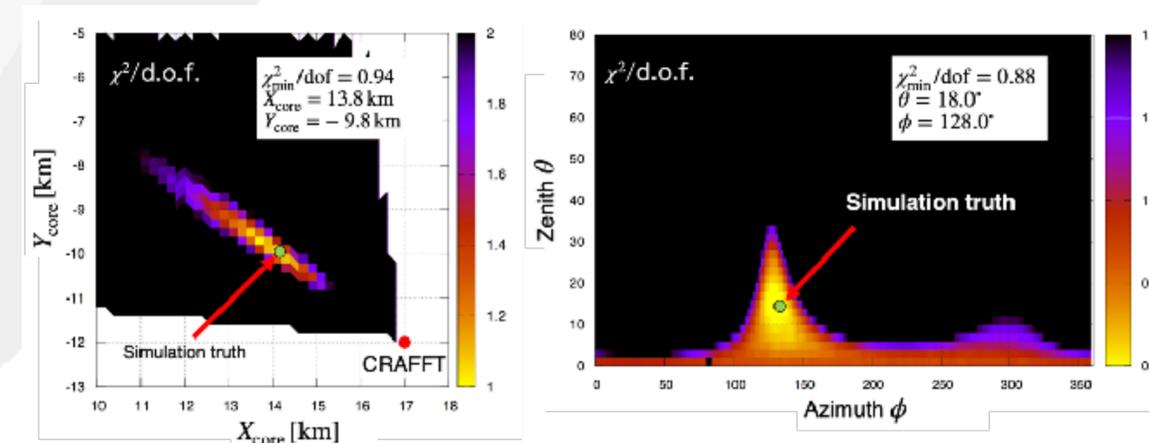


Fig3. Reduced χ^2 distribution for geometry reconstruction by waveform fitting. (Simulation study) χ^2 is converged around true value.