

# Asia/Japan LCTPC Meeting Minutes

Aiko Shoji

Thursday, March 1<sup>st</sup>, 2018. 18:00-19:30 JST

Attendance: Tomohisa Ogawa, Keisuke Fujii, Makoto Kobayashi, Takeshi Matsuda, Akira Sugiyama, Takahiro Fusayasu, Shinya Narita, Kentaro Negishi, Sho Sugiyama, Wataru Matsushima, Yukihiro Kato, Ron Settles, Huirong Qi, Aiko Shoji

## 1 General News and Discussion

- The regular meeting on March 22<sup>nd</sup> will be canceled because of JPS meeting and the season of graduation ceremony.
- It was decided during the LCTPC Collaboration Meeting to have special topical analysis meetings to discuss between groups the results of our R&D tests. Peter and Paul propose to hold monthly meetings, each on a given topic. They propose to start with 'dE/dx resolution and systematics' (on Late March) for which several groups already have new results. Please fill the doodle which was sent by Paul to decide the meeting date.
- 2 new students (SOKENDAI) will join our group (master and doctor).
- ILC meeting was held on February 20-22 in Ichinoseki which is the candidate site for the ILC. At the conference, there were 63 participants. At the opening ceremony on the first day, Ties Behnke of DESY explained that the necessary documentation for getting the ILC included in the next European strategy for particle physics needed to be submitted by December 18, 2018. Hopes are high that Japan will be the host country for the ILC, and for the Japanese government to voice their intentions on the ILC this year. Jan Timmermans of Nikhef talked about "TPC: Technological status and ongoing studies" on behalf of LCTPC group. His talk included Ceramic GEM study by University of Siegen and Timepix study by DESY and Bonn-Nikhef-Saclay etc (also, Ropperi).

## 2 Reports on our Activities

Yukihiro reported R&D of Ceramic GEM. Ceramic GEM is GEM sheet using LTCC (Low Temperature Co-fired Ceramics) as an insulator. He carried out gain measurement using LTCC-GEM(100um and 200um-thick). Gain by Komiya's (TIRI) measurement can be reached over 10000 (100um-thick), Yukihiro doesn't know why his result is lower than Komiya's result. And, at Yukihiro's result, energy resolution is bad, that reason be estimated discharge. He explained some black parts of the ceramic GEM surface are LTCC. The holes are not clear (they are jagged a little). He mentioned that the gain stabilized after 1 hour at the measurement. Akira asked where is caused discharge. Yukihiro answered discharge causes same place. Akira asked about flatness of ceramic GEM. Yukihiro hasn't complete to measure the flatness. Makoto asked if the hole size could be changed on production. Yukihiro said production company (Hirai-Seimitsu) may have a punching device of one hole size only, so the hole size couldn't be changed now, but they may be able to change the pitch. Tomohisa wanted to see the cross section of ceramic GEM. Yukihiro said that he would like to ask to the company that. Tomohisa asked whether the charge up was caused. Yukihiro estimated the discharge was caused by charge up. Makoto said that he would like to ask to University of Siegen that similarly. In the Yukihiro's measurement, the gain was changed corresponding to the pad size. Akira mentioned that reason may be from the capacitance.

Wataru reported R&D of Ceramic GEM in Iwate University. They also carried out gain measurement using LTCC-GEM (200um-thick), but they seemed to obtain charge distribution like noise. Akira said that it may be discharge rather than noise. Although Iwate University uses Belle amp and peak hold type ADC, Makoto suggested to use ORTEC amp. But, Akira said that ORTEC amp may have much noise and if you use Belle amp, charge sensitive ADC is better than peak hold type ADC. Wataru asked whether LTCC-GEM should be aging test. Akira said some people carry out the aging test, others don't carry out. Iwate's measurement took many time, Yukihiro's measurement took 3 minutes using  $^{55}\text{Fe}$  source (the source continue to be used for over 10 years).

### **3 AOB**

Next meeting will be held on March 8<sup>th</sup> 2018 at 18:00JST.