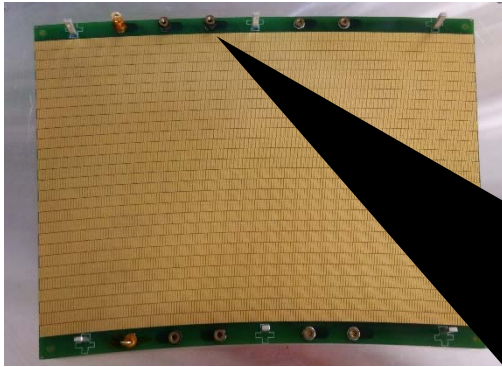# Weekly Report
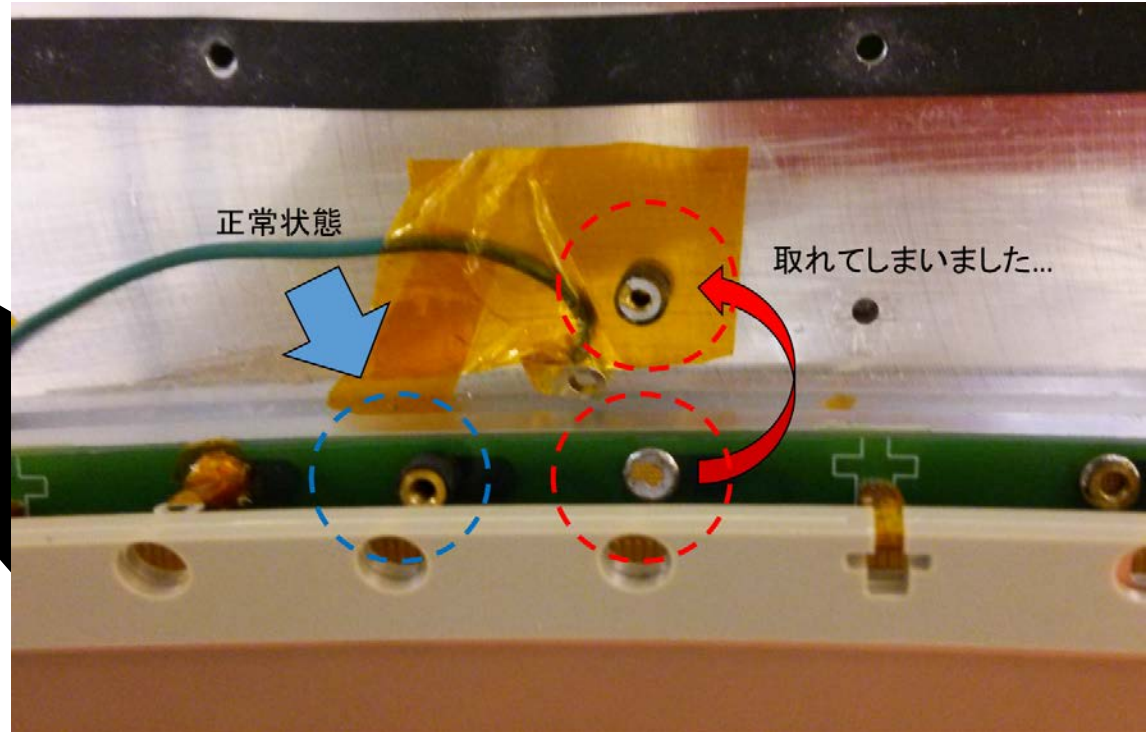
Content: (1) Bad News

(2) Transmission with correction(Temperature and Pressure)

Aiko SHOJI
Iwate University

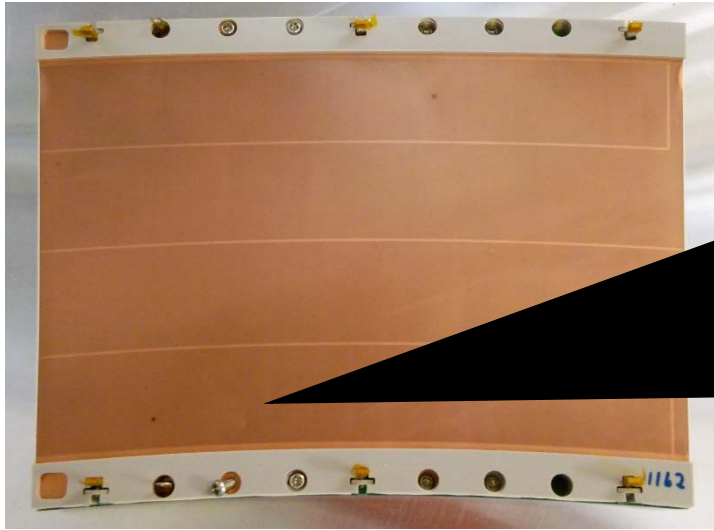The pole of GEM voltage application of the PC board has been removed, when I picked up GEM.

PC board

正常状態

取れてしまいました…

- I was hard to pick up the GEM, which is bad flaming GEM.
- So, I put to too much strength to pick up the GEM => the pole sounds " Boki !! "

Improvement plan:
- Make a good framing GEM(next time)
- Make sure to pick up the GEM very very carefully

But I succeeded to repair the pole by soldering.

I scratched GEM by plus driver, when I was turning the screw which GEM voltage application.

GEM

- The screw did not easily enter the hole
  => My hand holding a screwdriver broke the balance.

Improvement plan:
- Make sure to turn the screw very very carefully
- Put a cover to protect on the GEM

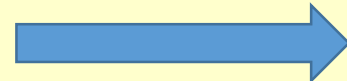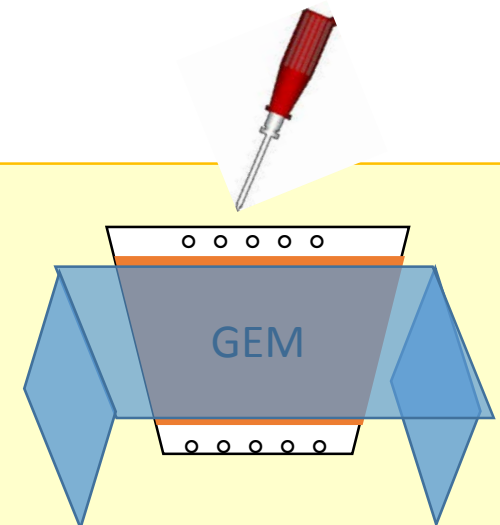Image of cover

I output environmental data for each Run Number using the macro sent by e-mail.

I calculated the electron transmission rate with correction (Temperature and Pressure) .

```
#Run   day     T['C]  T[K]    AP[hPa]   P/T     SPR[hPa]  H2O[ppm]   O2[ppm]
19987 12.988 18.162 291.16 1014.443 3.484   1009.181  54.24971  56.2780
19985 12.976 18.282 291.28 1013.321 3.479   1010.790  57.75781  56.3844
19984 12.969 18.176 291.18 1015.520 3.488   1009.173  59.34311  56.4407
19983 12.964 18.233 291.23 1014.580 3.484   1009.442  60.75227  56.4907
19982 12.958 18.132 291.13 1012.879 3.479   1008.179  62.16143  56.5408
19981 12.953 18.106 291.11 1015.801 3.489   1007.260  63.57059  56.5909
19980 12.947 18.100 291.10 1016.455 3.492   1011.245  64.97975  56.6409
19979 12.941 18.120 291.12 1015.240 3.487   1008.360  66.56505  56.6972
19978 12.935 18.125 291.12 1014.492 3.485   1009.095  67.97421  56.7473
19977 12.930 18.100 291.10 1014.417 3.485   1006.814  69.38336  56.7973
19976 12.924 18.133 291.13 1016.049 3.490   1008.420  69.66232  56.8091
19975 12.918 18.222 291.22 1017.285 3.493   1010.510  69.81529  56.7847
19974 12.912 18.119 291.12 1015.395 3.488   1006.835  70.39219  56.7572
19973 12.906 18.117 291.12 1016.715 3.492   1008.448  70.24732  56.7328
19972 12.901 18.167 291.17 1015.468 3.488   1012.235  69.38935  56.7083
20042 15.578 17.517 290.52 1013.260 3.488   1004.862  131.4521  67.4827
20041 15.574 17.404 290.40 1013.198 3.489   1005.314  131.8160  67.5342
20043 15.583 17.535 290.53 1012.792 3.486   1005.121  131.0882  79.1813
20044 15.588 17.552 290.55 1011.400 3.481   1004.406  130.7244  93.1497
20045 15.593 17.569 290.57 1009.603 3.475   1004.737  131.2240  107.118
20046 15.598 17.587 290.59 1008.951 3.472   1004.988  131.4081  121.087
20047 15.603 17.566 290.57 1011.024 3.480   1005.005  131.3100  135.055
20048 15.608 17.531 290.53 1010.918 3.480   1007.983  130.7922  149.024
20049 15.613 17.539 290.54 1010.592 3.478   1006.029  131.4739  164.987
20050 15.619 17.546 290.55 1012.372 3.484   1004.213  131.3735  180.951
20051 15.626 17.523 290.52 1012.945 3.487   1005.597  131.0420  200.906
20052 15.631 17.566 290.57 1014.247 3.491   1004.779  131.5846  214.875
20053 15.636 17.533 290.53 1010.168 3.477   1008.690  130.9099  230.839
20054 15.642 17.519 290.52 1011.106 3.480   1002.972  130.8949  246.803
20055 15.647 17.609 290.61 1013.050 3.486   1004.287  131.2780  262.767
```

Using y_0(when Drift length z=0) and Charge.C

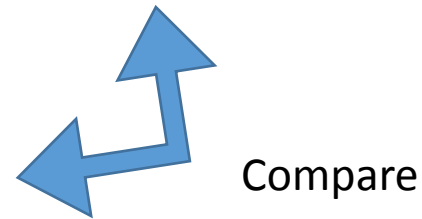|	Gate GEM (w/)	Field Shaper(w/o Gate GEM)	Transmission
Non Correction			$$\frac{355(GG)}{440(FS)}$$ = 80.8 %
Correction (Temperature & Pressure)			$$\frac{348(GG)}{425(FS)}$$ = 82.4 %

Ikematsu Sim: 78 % Exp: 81%(Gate GEM Size:10*10cm^2)

Using y_0(when Drift length z=0)

	Gate GEM (w/)	Field Shaper(w/o Gate GEM)	Transmission
Only **Temperature** Correction			$$\frac{357(GG)}{442(FS)}$$ = 80.8 %
Only **Pressure** Correction			$$\frac{350(GG)}{426(FS)}$$ = 82.2 %

Pressure seems to influence charge.

- Make a graph of position resolution using GMResol.C .

- Calculate Cd(Diffusion Constant) using PadRes.C

- Simulation Cd using Garfield++

Compare

etc….