MTx and ATx Transmitters for ATLAS LAr, Status and Plan
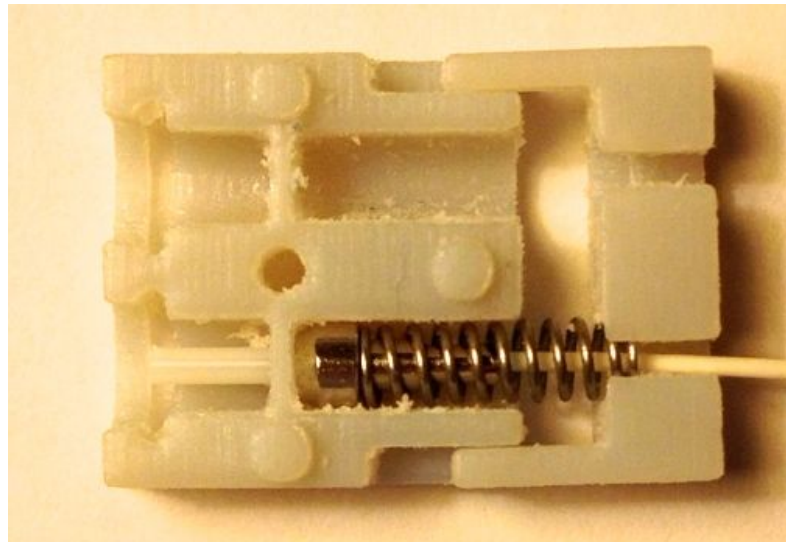
Jingbo Ye

For the SMU Group

# MTx

o   A dual channel optical transmitter based on LOCld1 or LOCld2 and LC TOSA VCSELs.

o   The idea came from SF-VTRx of the VL project.

o   MTx specific: 6 mm tall required by ATLAS LAr.

o   A custom fiber but with standard LC ferrule, flange and spring.
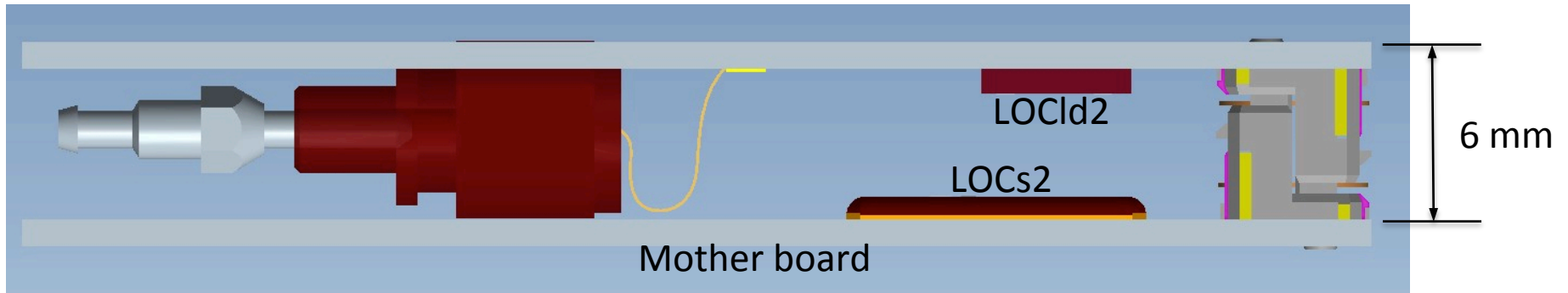

o   MTx is designed to work with LOCs2 (a dual channel serializer) that will be in QFN-88, 10 mm x 10 mm.
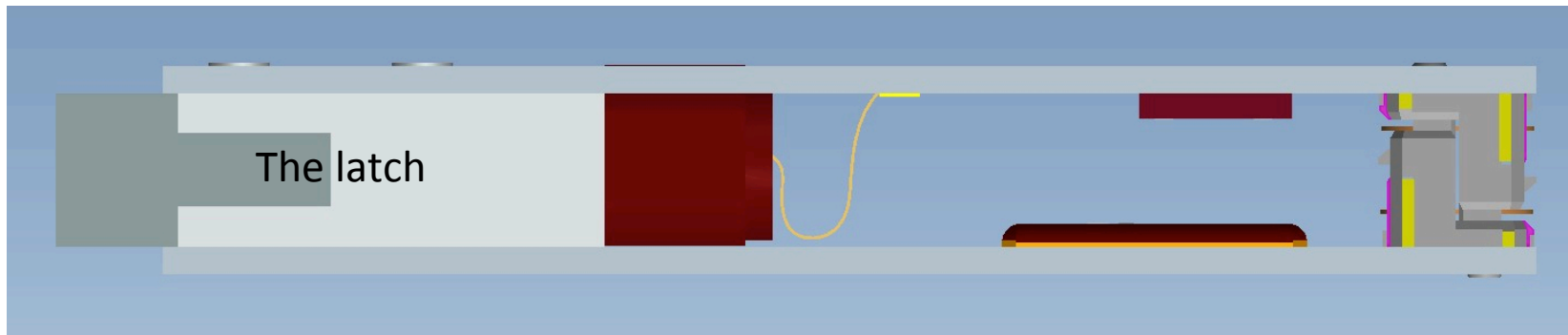
MTx

Optical coupling is guaranteed by the TOSA. The custom latch engages fibers with a screw in the front.
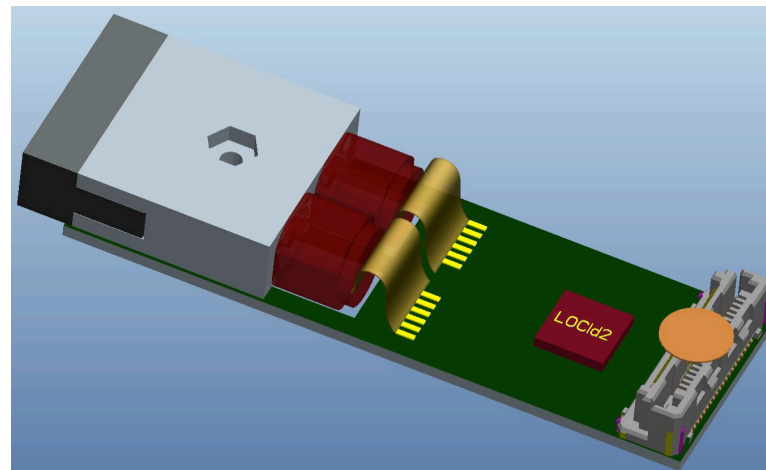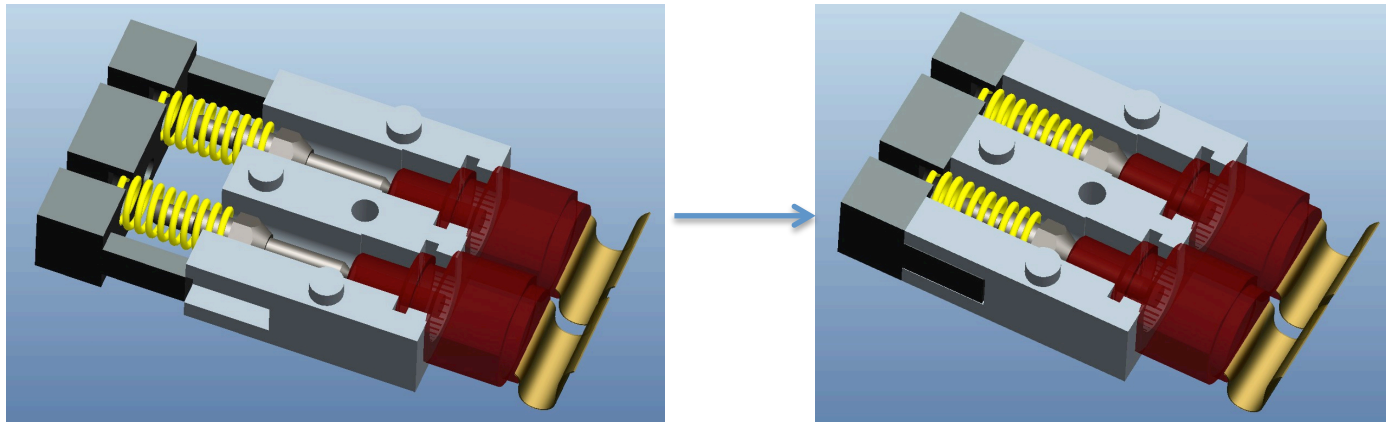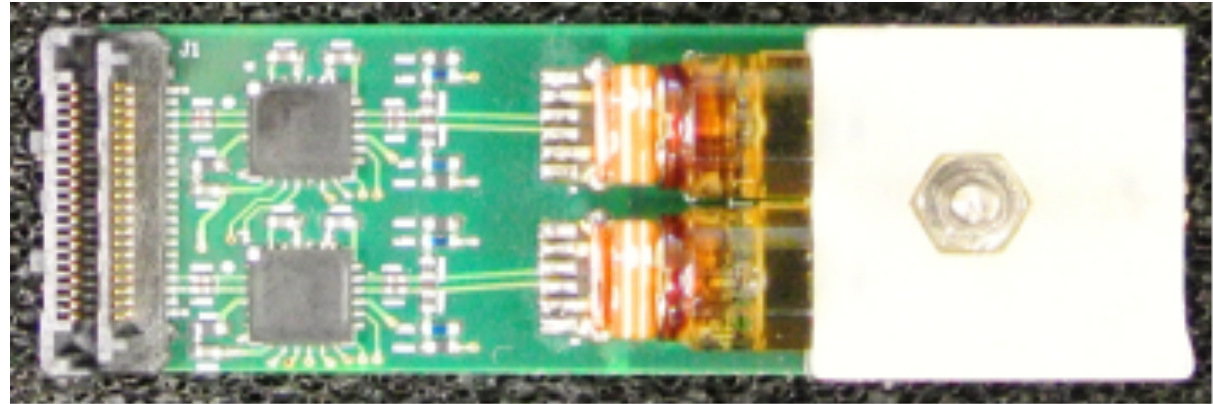
MTx

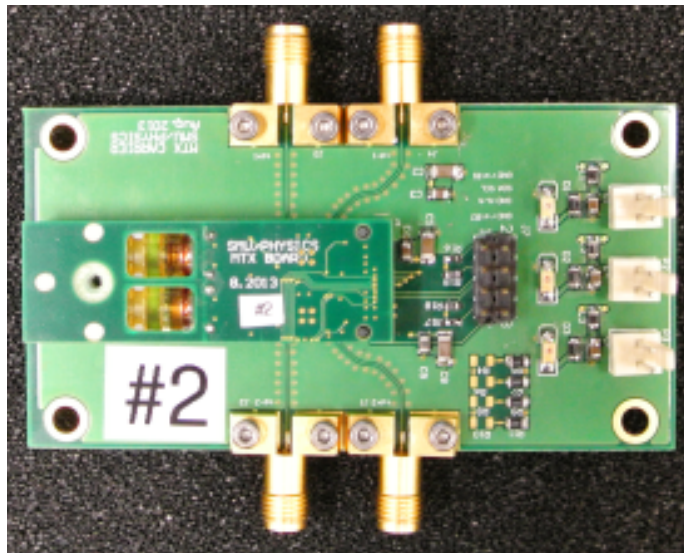Mother board w/ serializer. Side view without the latch

Side view with the latch

MTx

MTx with LOCld1 and Truelight 10G VESEL
TTF-1F59-427, component side view


Carrier board with MTx, top view.

SMU will provide a small number of
this evaluation kit to interested
groups.

MTx, Status and Plan

o The custom latch will be injection molded in 2014. The initial run will produce 10,000 latches. This is in collaboration with NJU (Ming Qi).

o QA tests, including a long term life test, will start in 2014 with LOCld1 and LOCld2 (limited by number of chips from MWP runs). This is in collaboration with IPAS (Suen Hou).

o We also plan to use 40 MTx in a demonstrator board in ATLAS in 2015.

o ATLAS LAr will need about 2,500 MTx modules. We will need help with production QA. Currently in discussion with NJU and IPAS.

ATx

o   A 12-way optical transmitter based on a VCSEL array.

o   This is an R&D item in CDRD with FNAL.

o   The difficulty in this work lies in the light coupling from the VCSEL to the fiber.
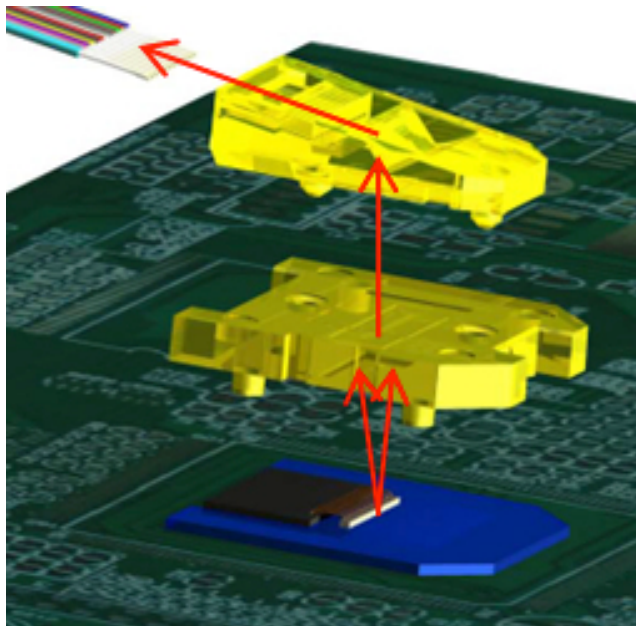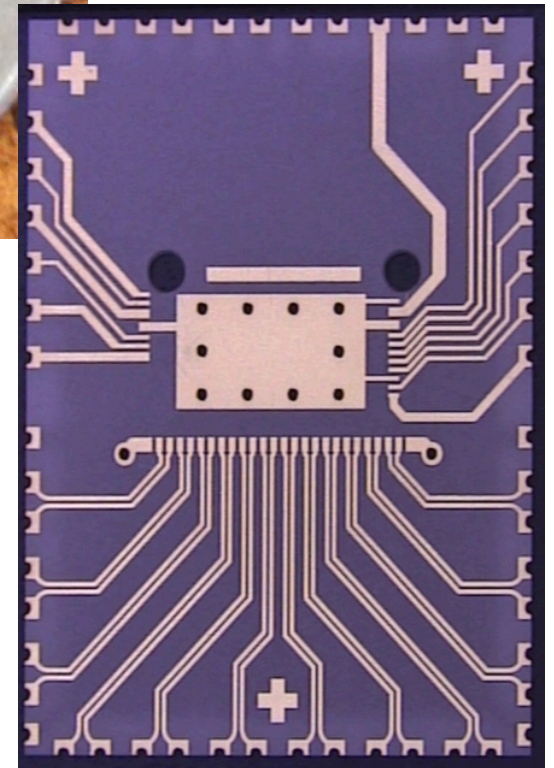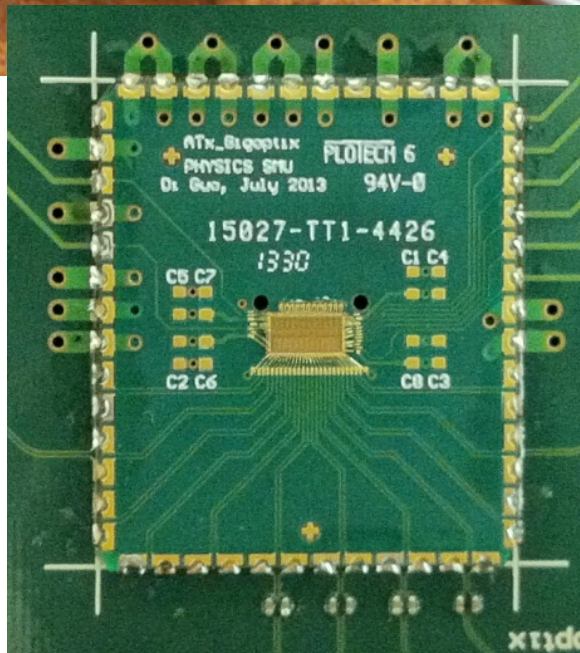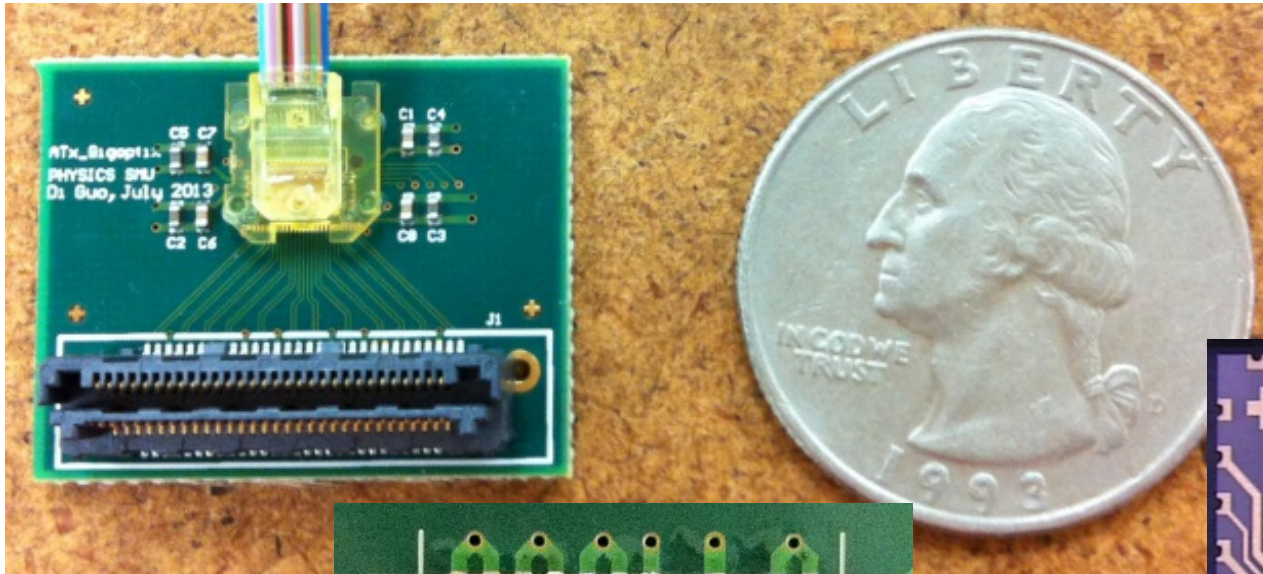

We decide to use MOI and the PRIZM LightTurn connector from USConec as the light coupler.

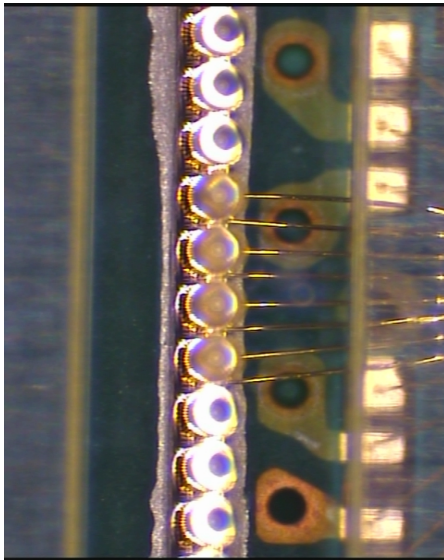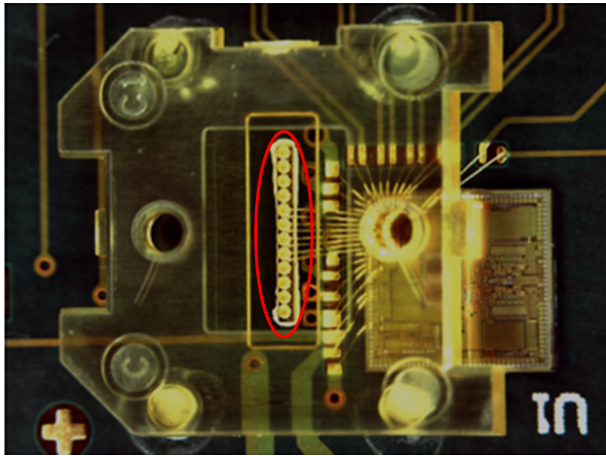This scheme provides heat dissipation for the VCSEL array and the driver through the large PCB.

ATx

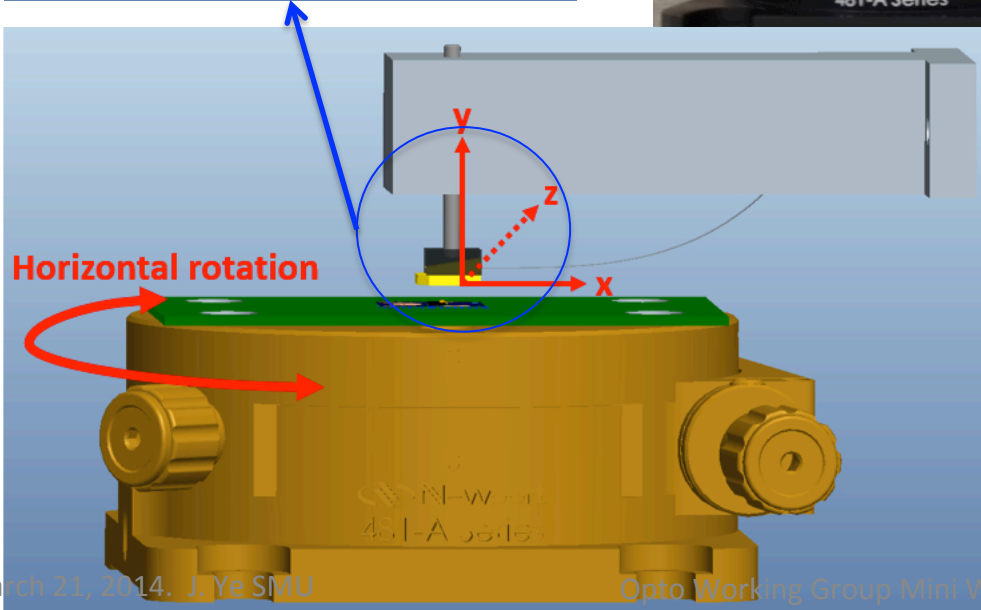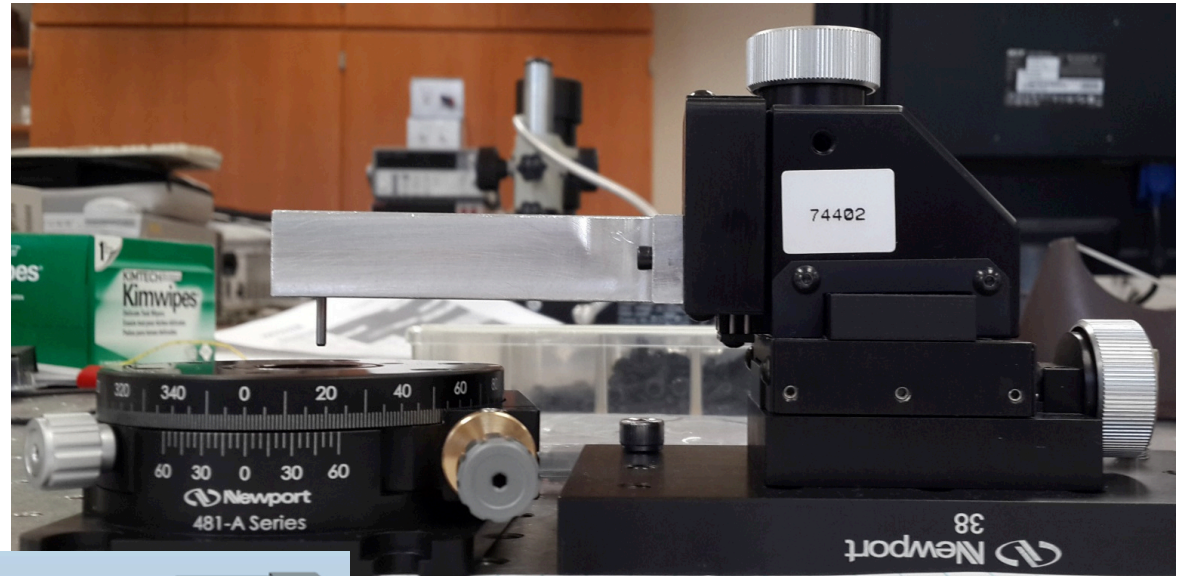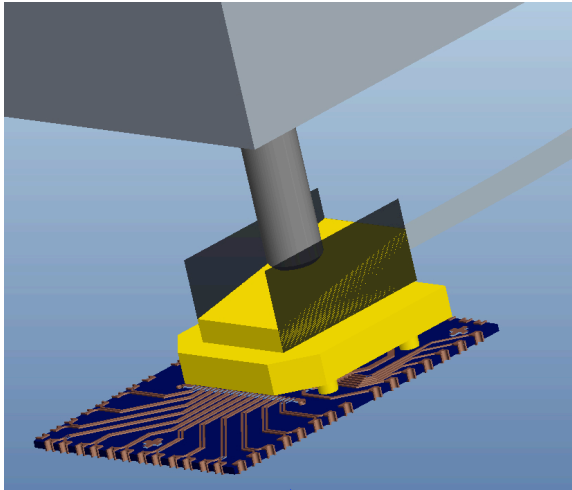FR4 PCB and a ceramic version of the carrier boards were made.

ATx

The first attempt with a local company for a passive alignment failed.

ATx

Now trying an active alignment scheme with manual stages at SMU

ATx, Status and Plan

o   New PCBs are in fabrication to try out this active alignment scheme first in "DC mode".

o   The active alignment scheme will be the last "in-house" effort on array VCSEL light coupling.

o   Future SMU efforts will shift to VL+.

o   The ATx effort is not directly for ATLAS LAr, although it may be considered if the effort turns out to be successful.