

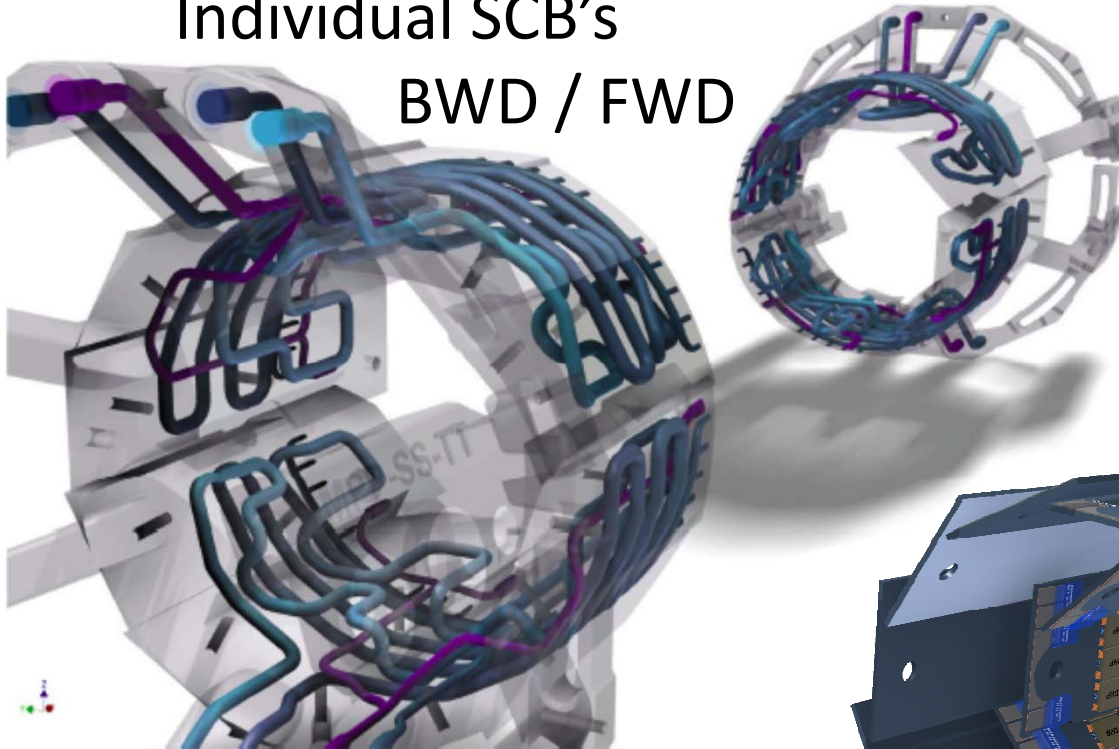


# Phase 3 PXD Half Shell Assembly: Mounting and Rotation Mechanism

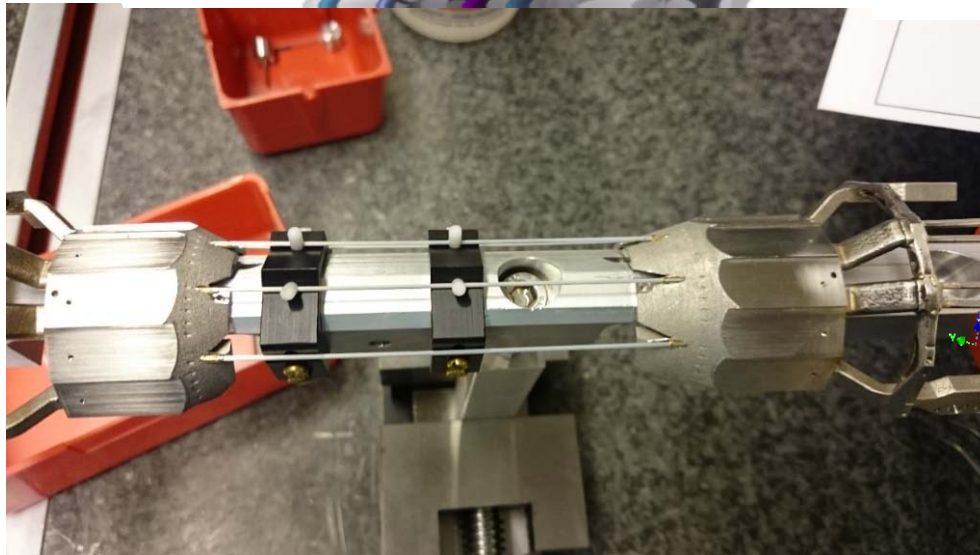
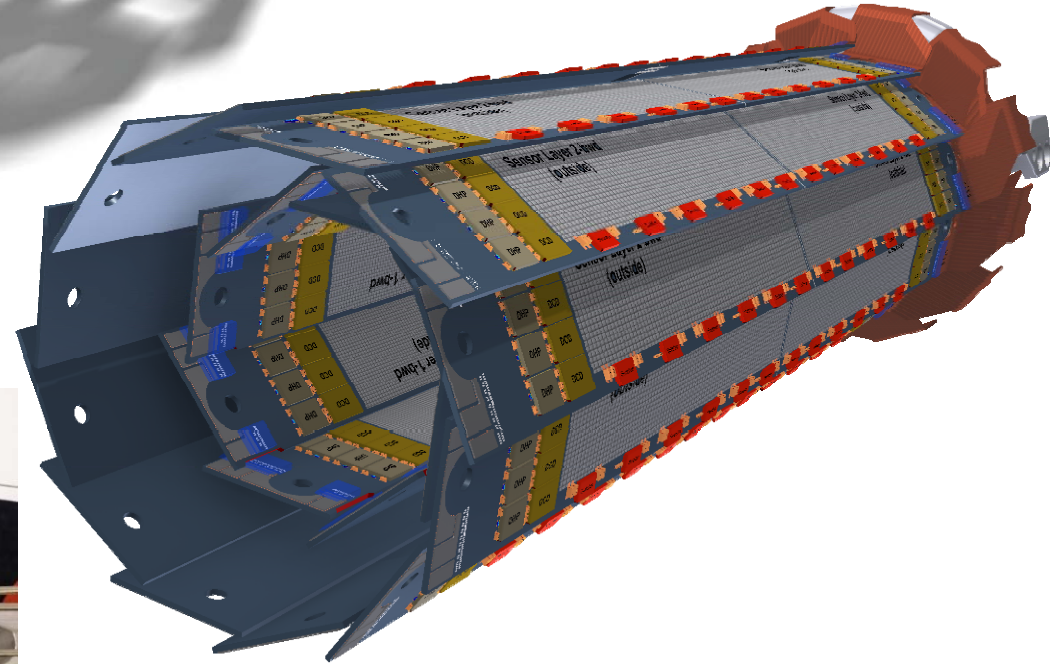
T. Ackermann, C. Kiesling

# Ladder Mounting Phase 3

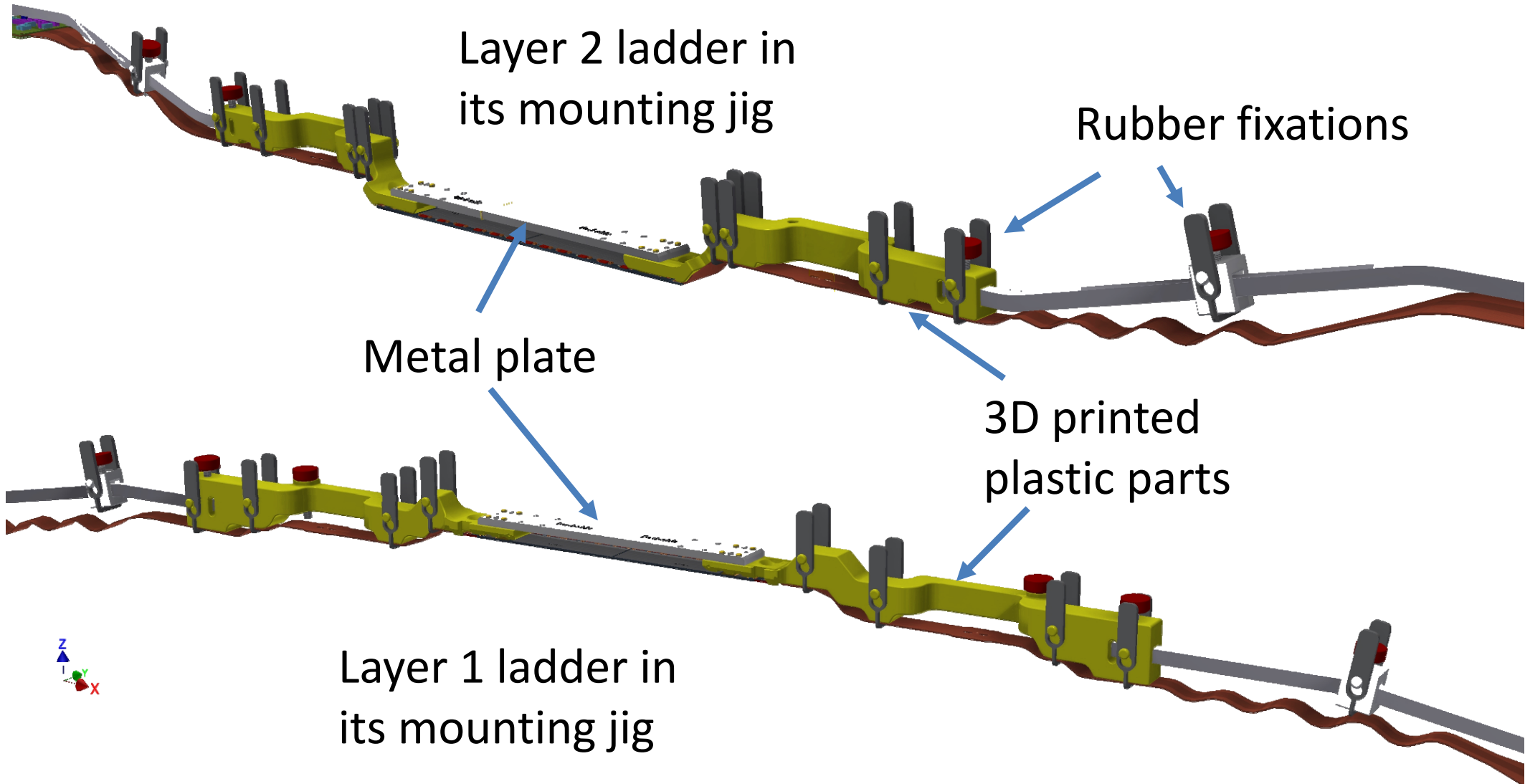
Individual SCB's  
BWD / FWD



40 modules glued to  
20 ladders  
(8 inner, 12 outer)  
L1 L2



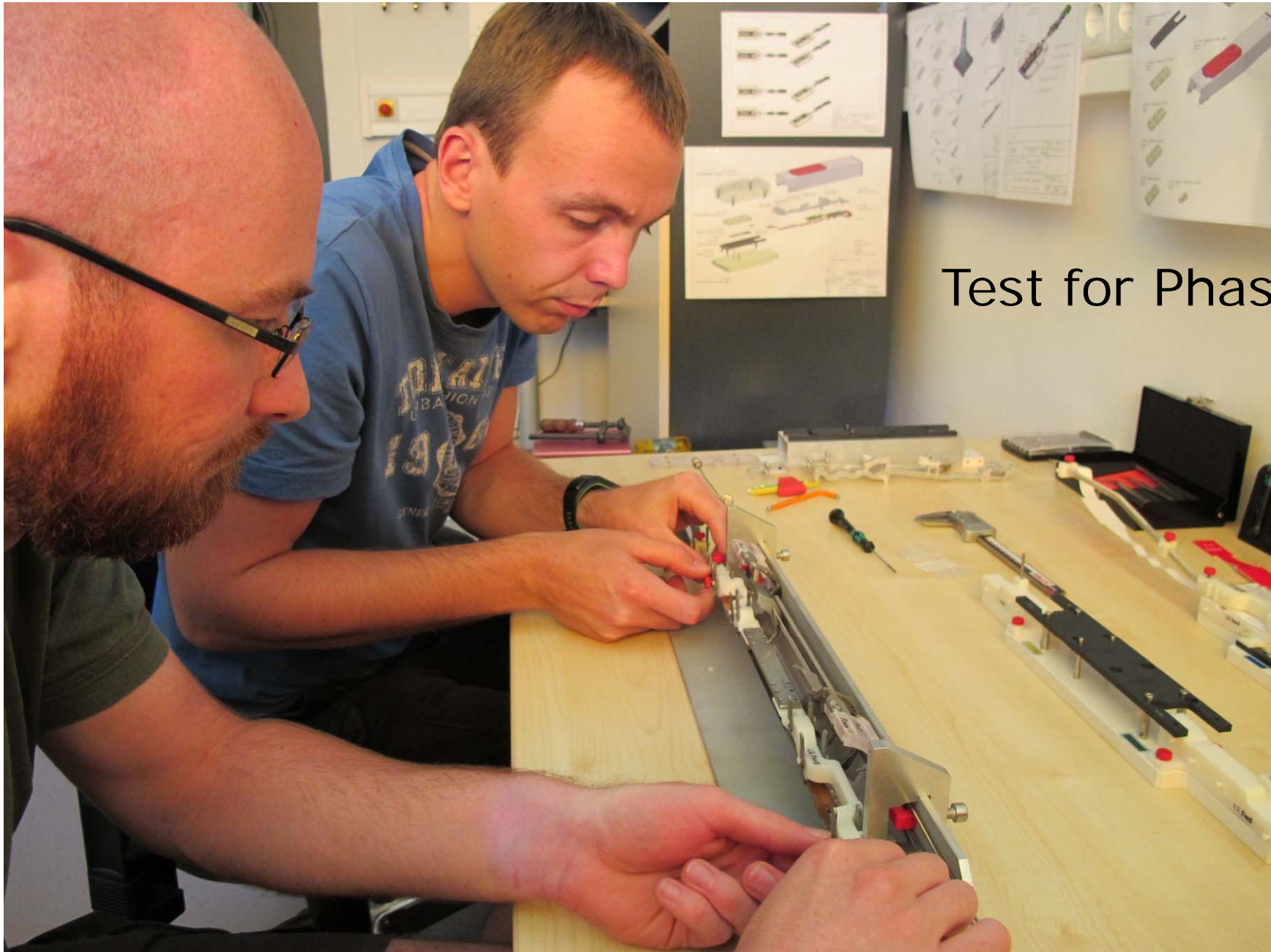
SCB Half Shell prepared for the  
ladder mount  
[SCB: Support and Cooling Block]



(tested procedure how to get from  
base jig to ladder mount jig -> backup)

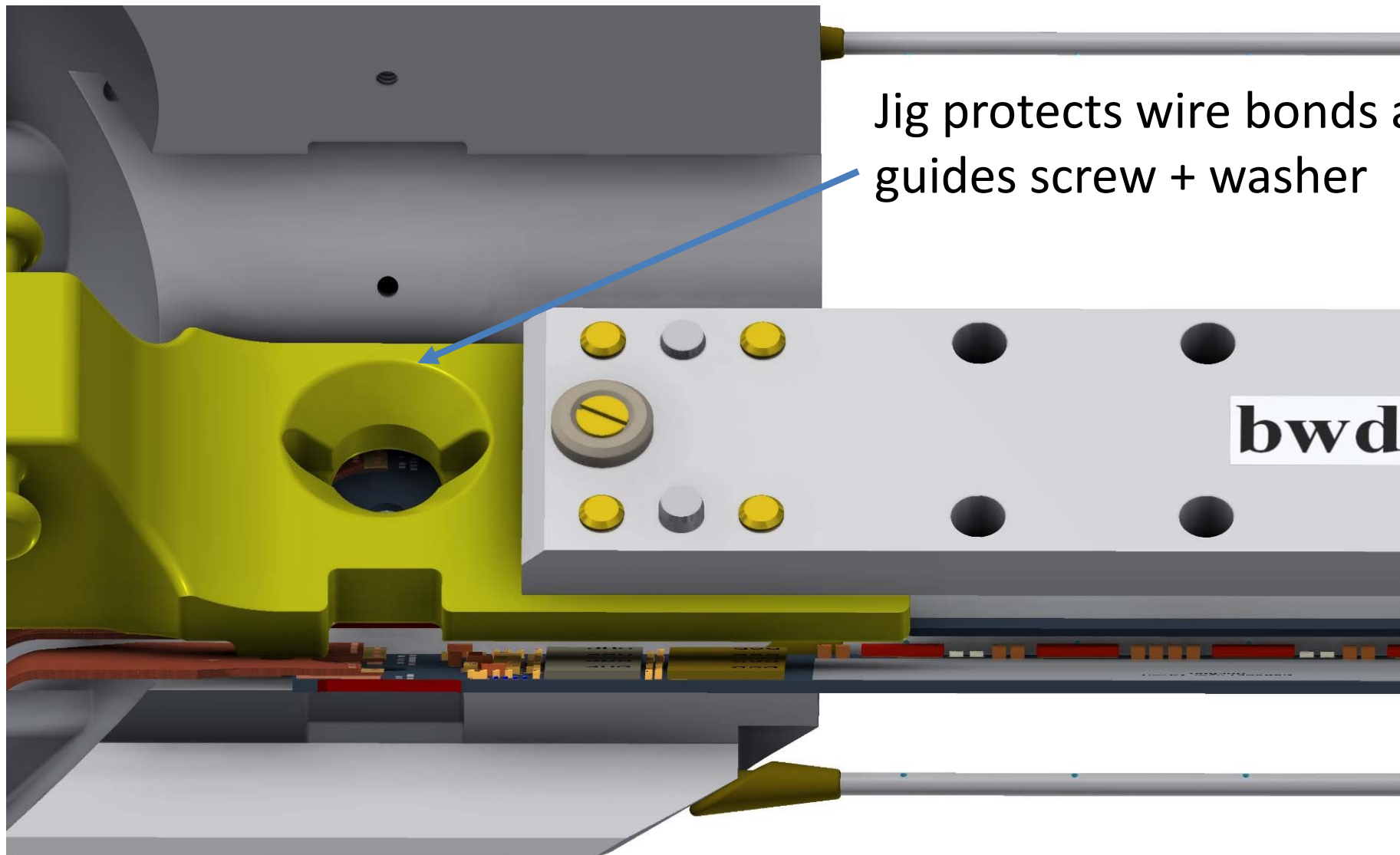


# Installation of Ladder in Mounting Jig



Test for Phase 2

# Ladder Fixing on SCB

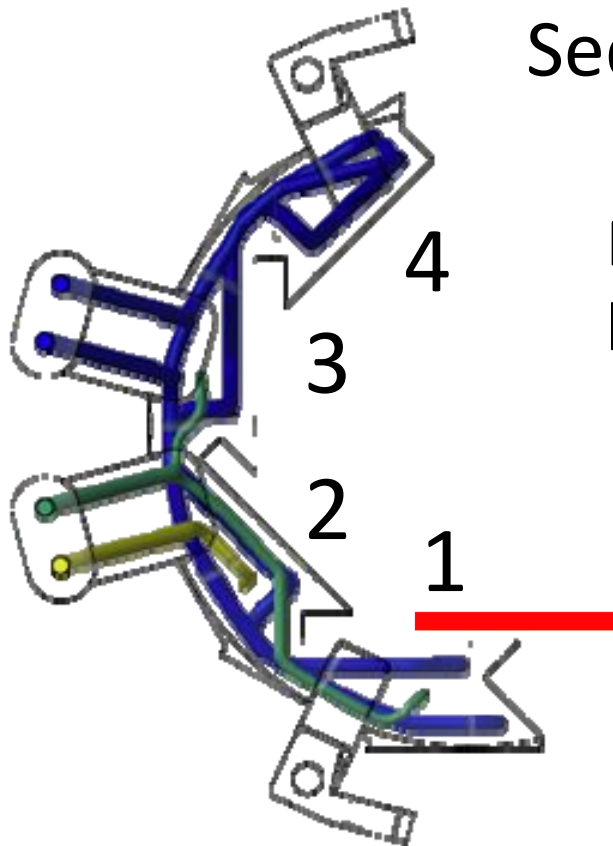


M1.2 screw, 15 mNm torque

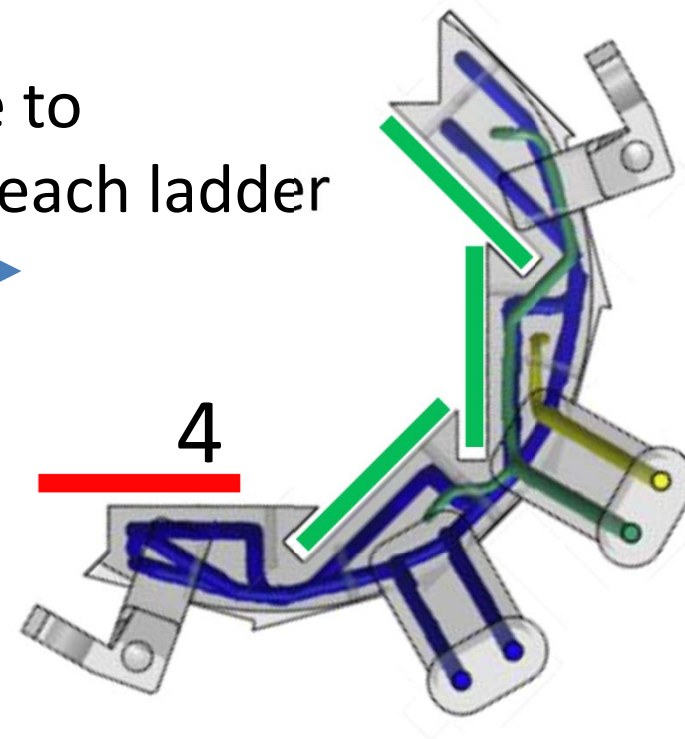


Mounting  
Sequence

looking towards +z, i.e. from  
BWD



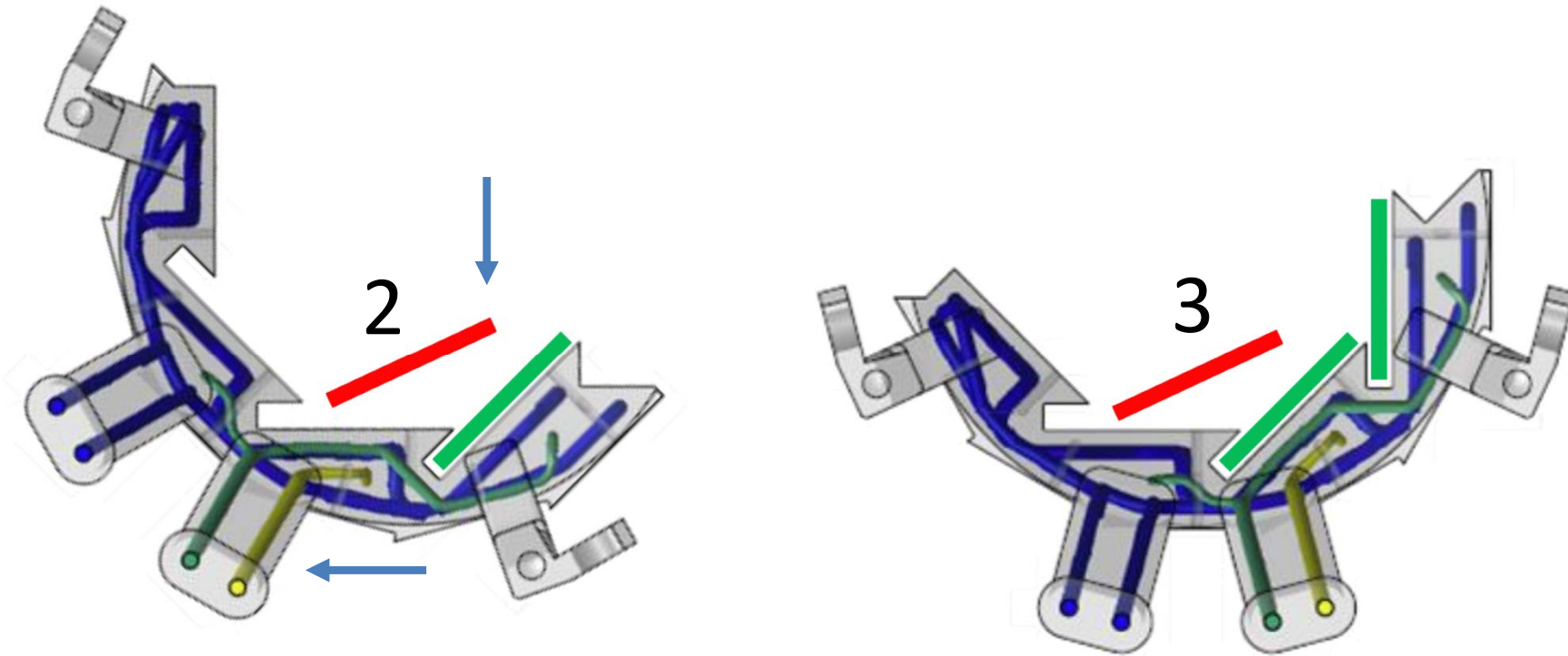
Rotate surface to  
horizontal for each ladder



1<sup>st</sup> and last ladder are “easy”

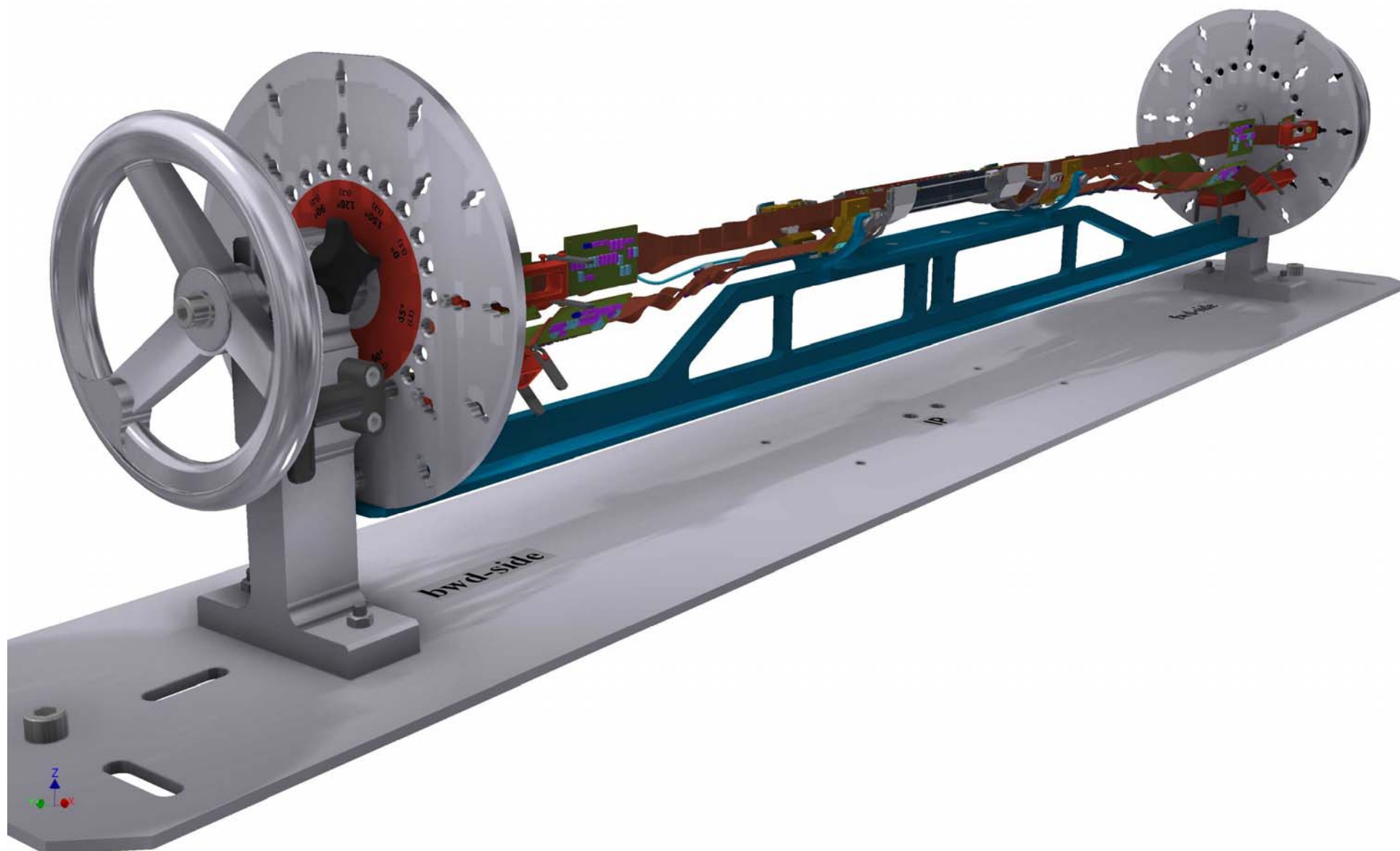


Ladders 2 and 3 are tricky



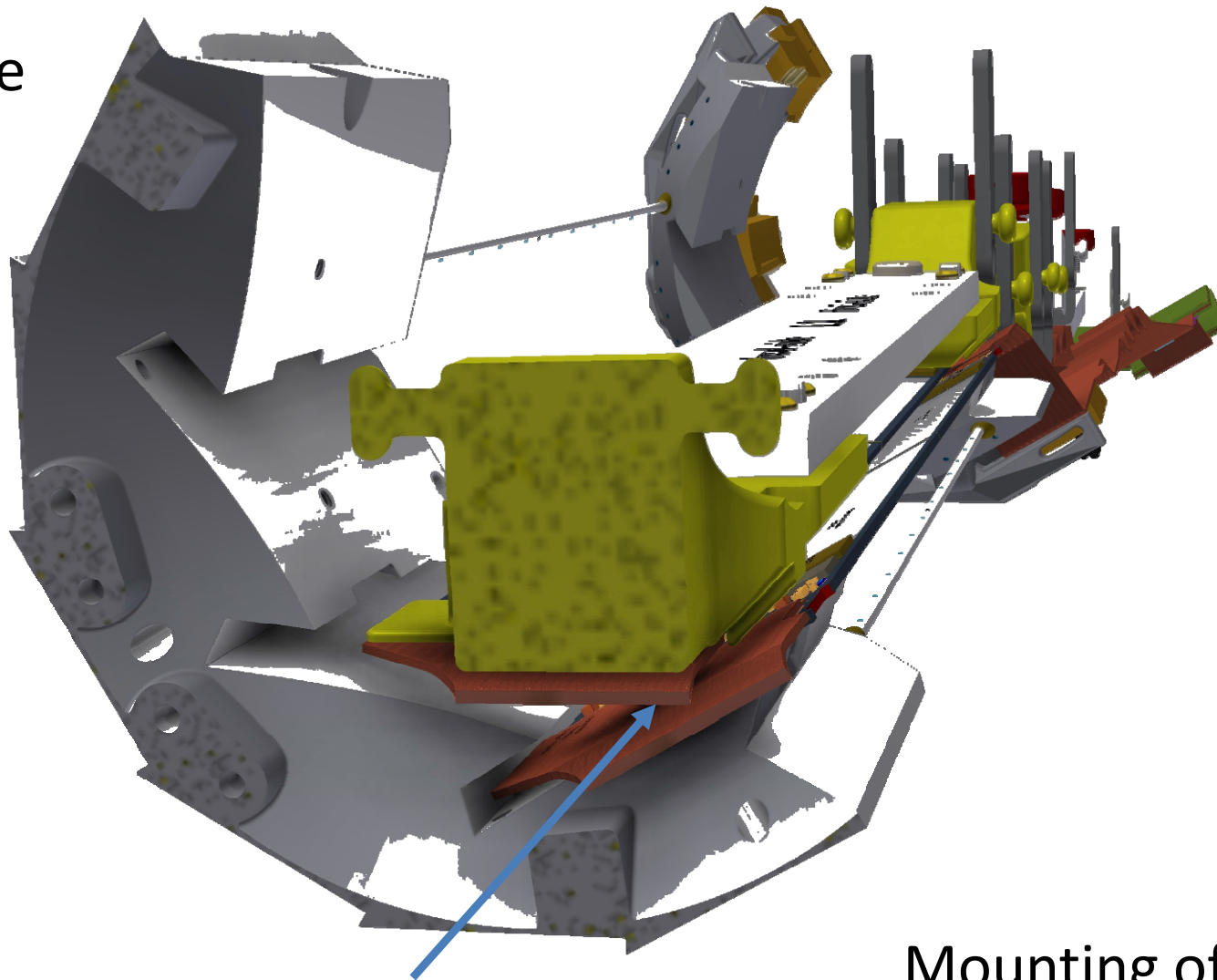
Ladder 2(3) must be guided “down” and “left” in a well coordinated way (tactile feedback mandatory)

# Ladder Mounting (Layer 1): Principle





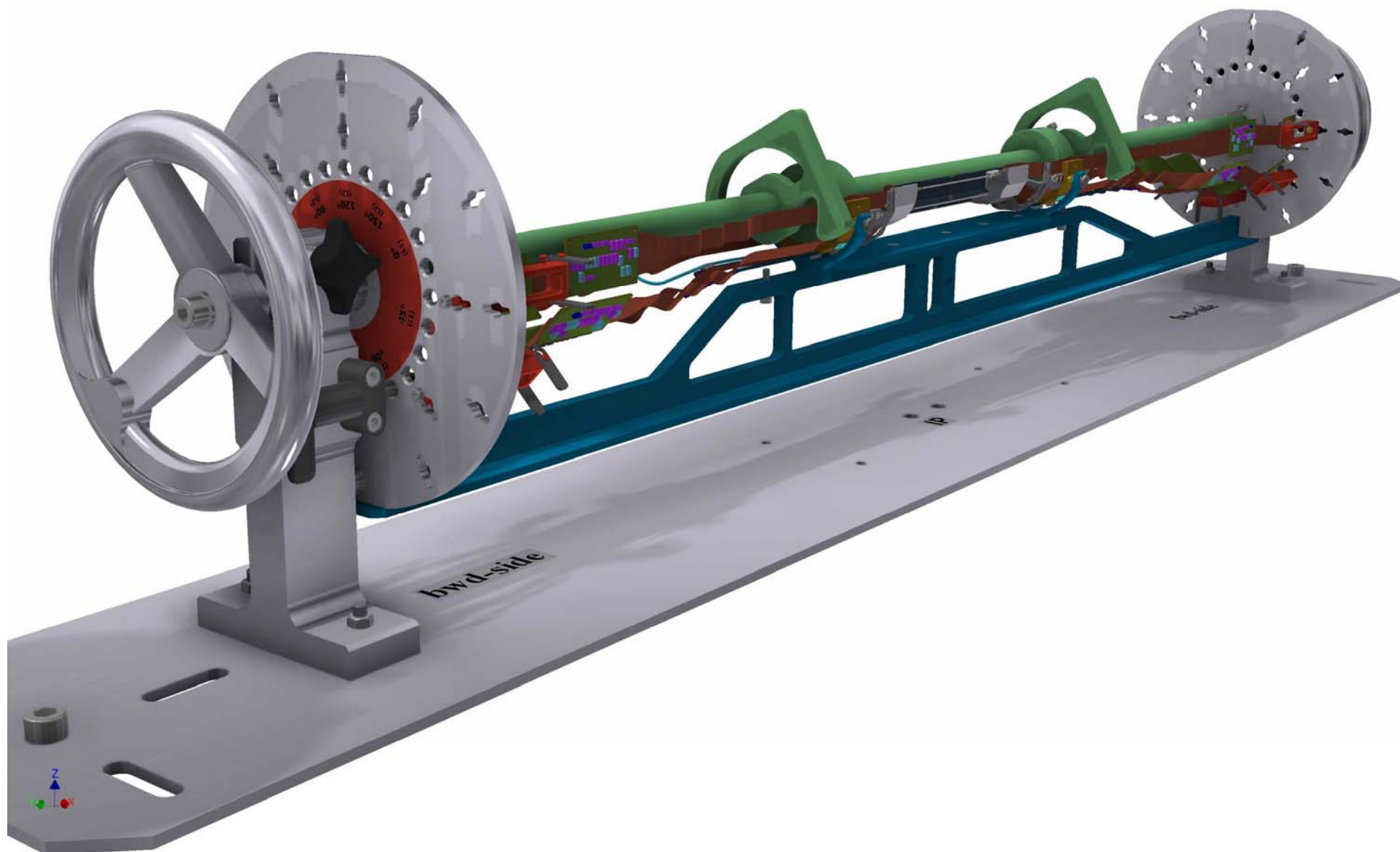
Rotate stage  
by 45°



Kapton(2) touches  
Kapton(1)

Mounting of Ladder 2

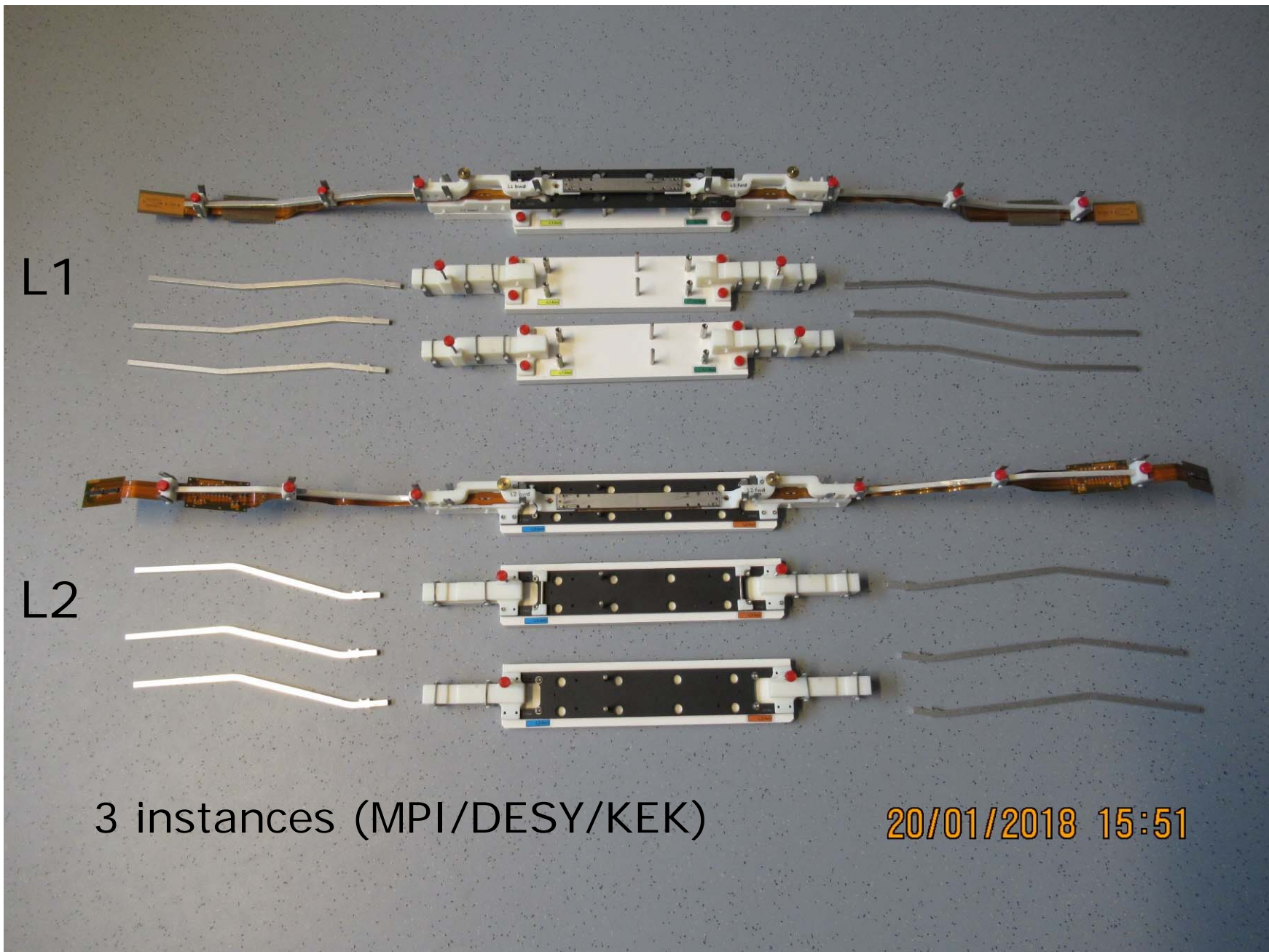














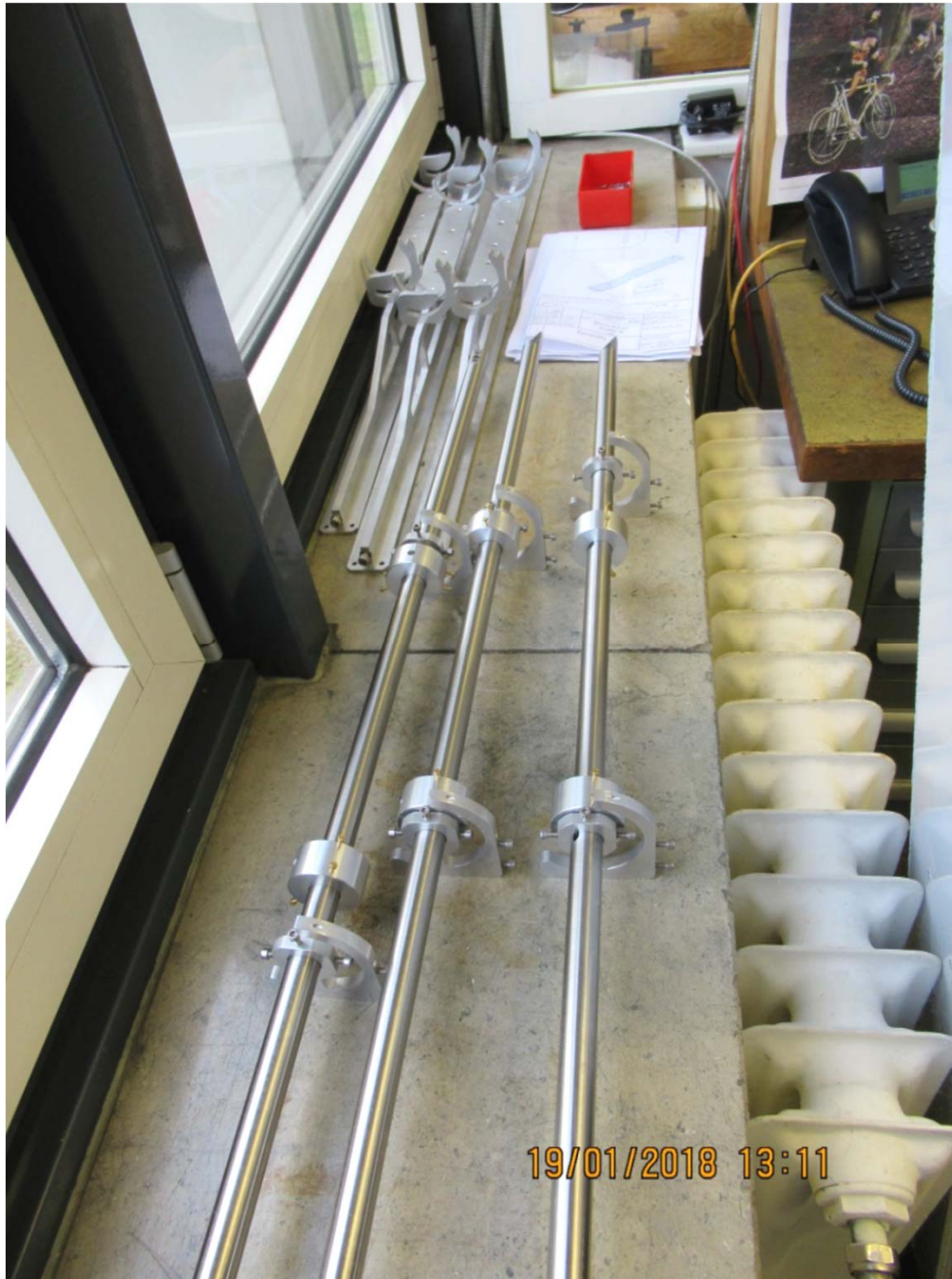
Ground plate





Rotation bars





Rotation bars

3 complete mechanisms are being built:

MPI

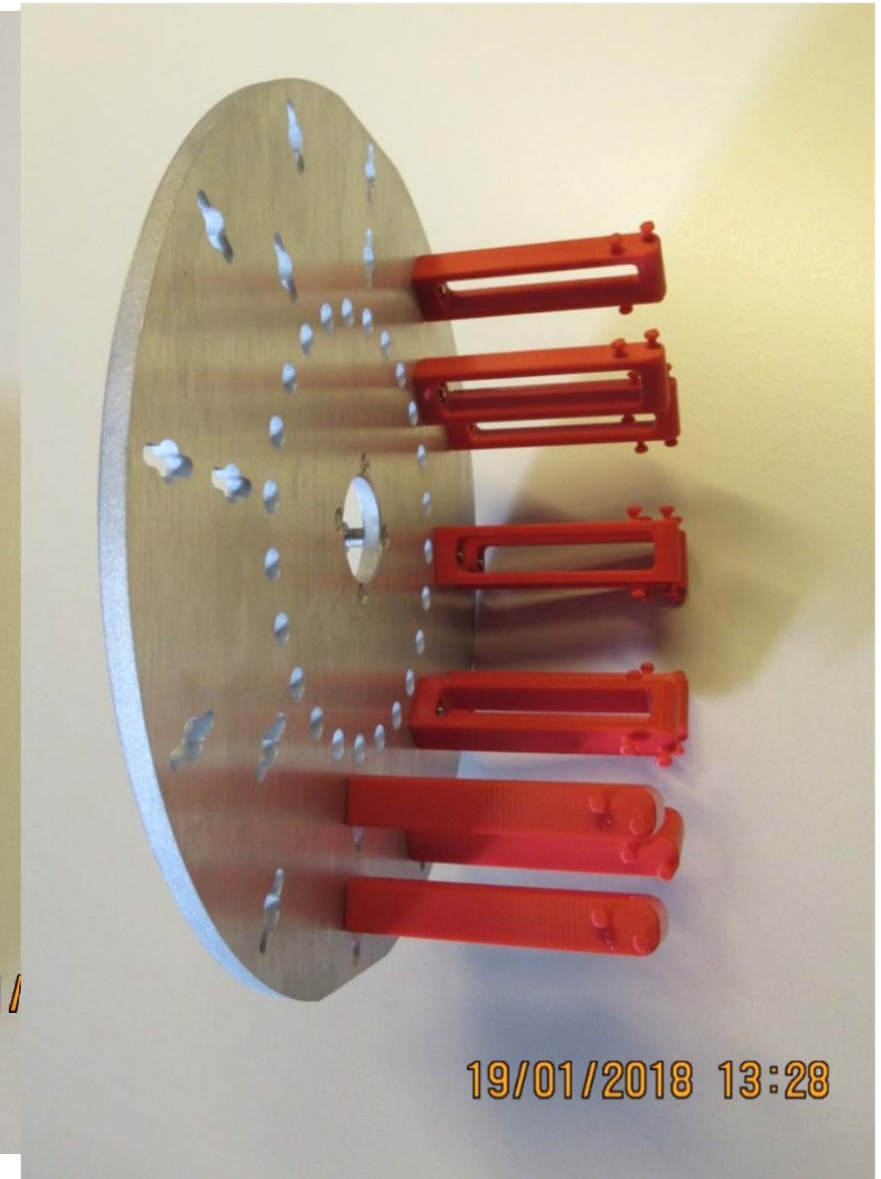
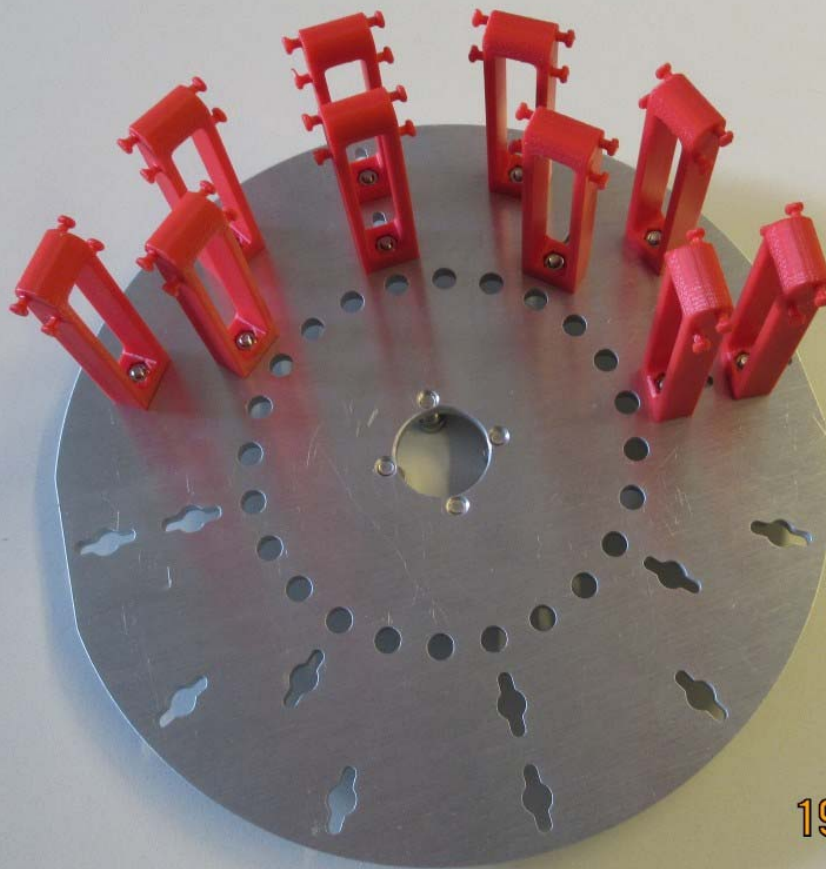
DESY

KEK

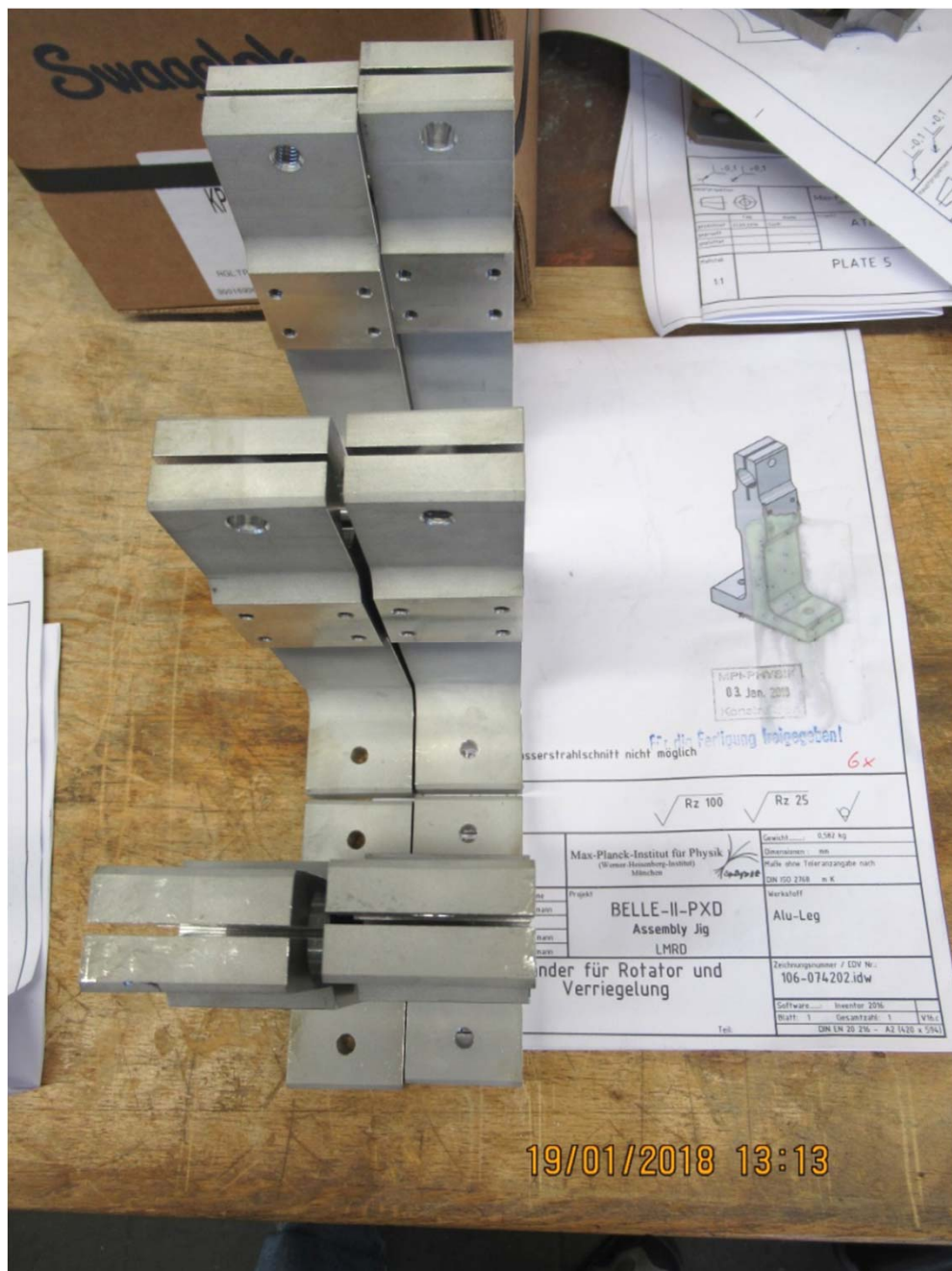




Holders for Kapton







Rotation bar supports

3 complete mechanisms are being built:

MPI

DESY

KEK

Next steps:

Assemble all parts to a full rotation mechanism

Test first with L1 and 2 dummy ladders (10 to be found/produced) -> create protocol

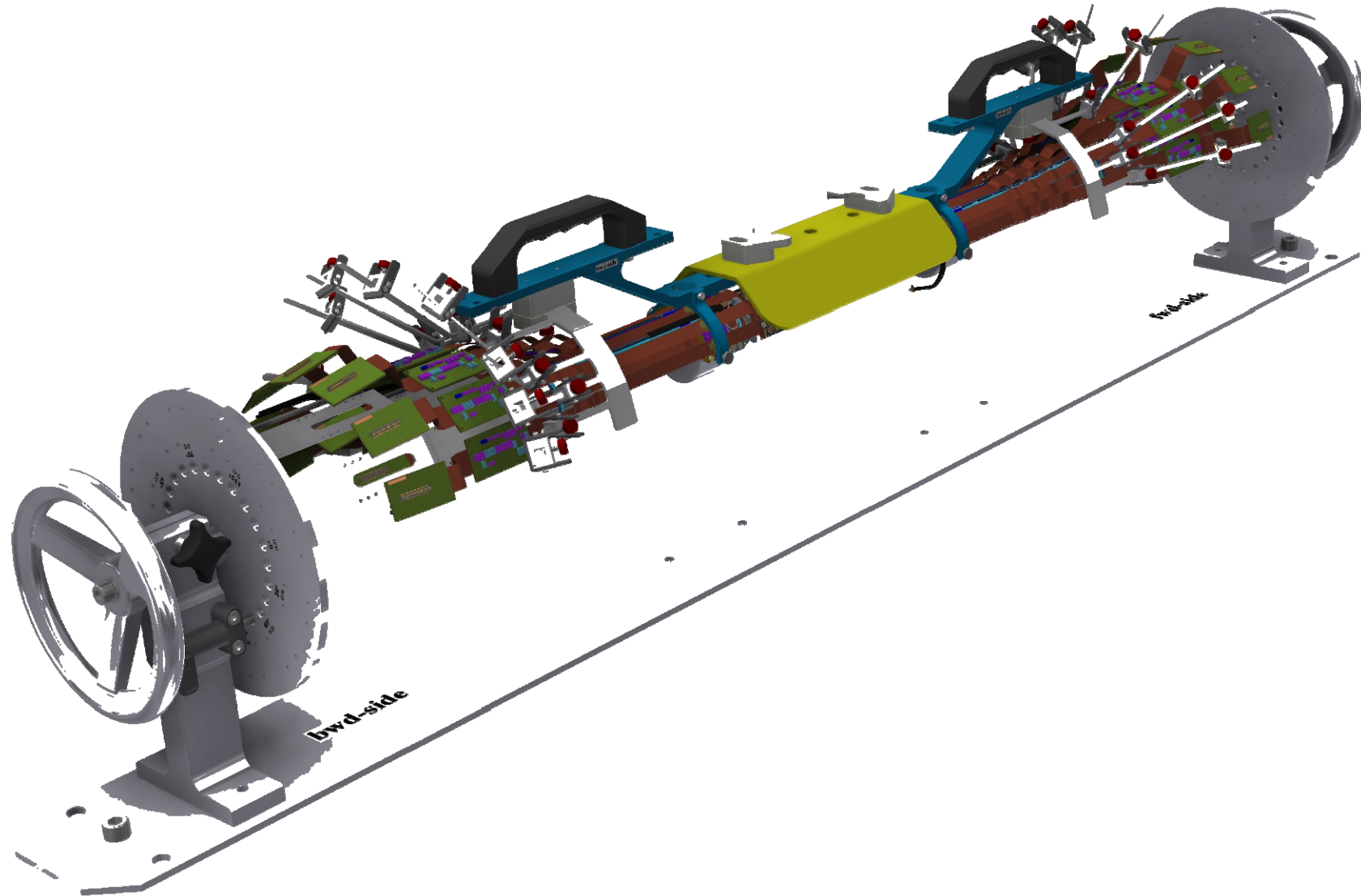
Potentially modify rotation / Kapton holding mechanisms -> improve protocol

Test with 2 real (broken) L1 ladders + dummies for the rest (only L1)

L2 should be reliably checked by dummies alone



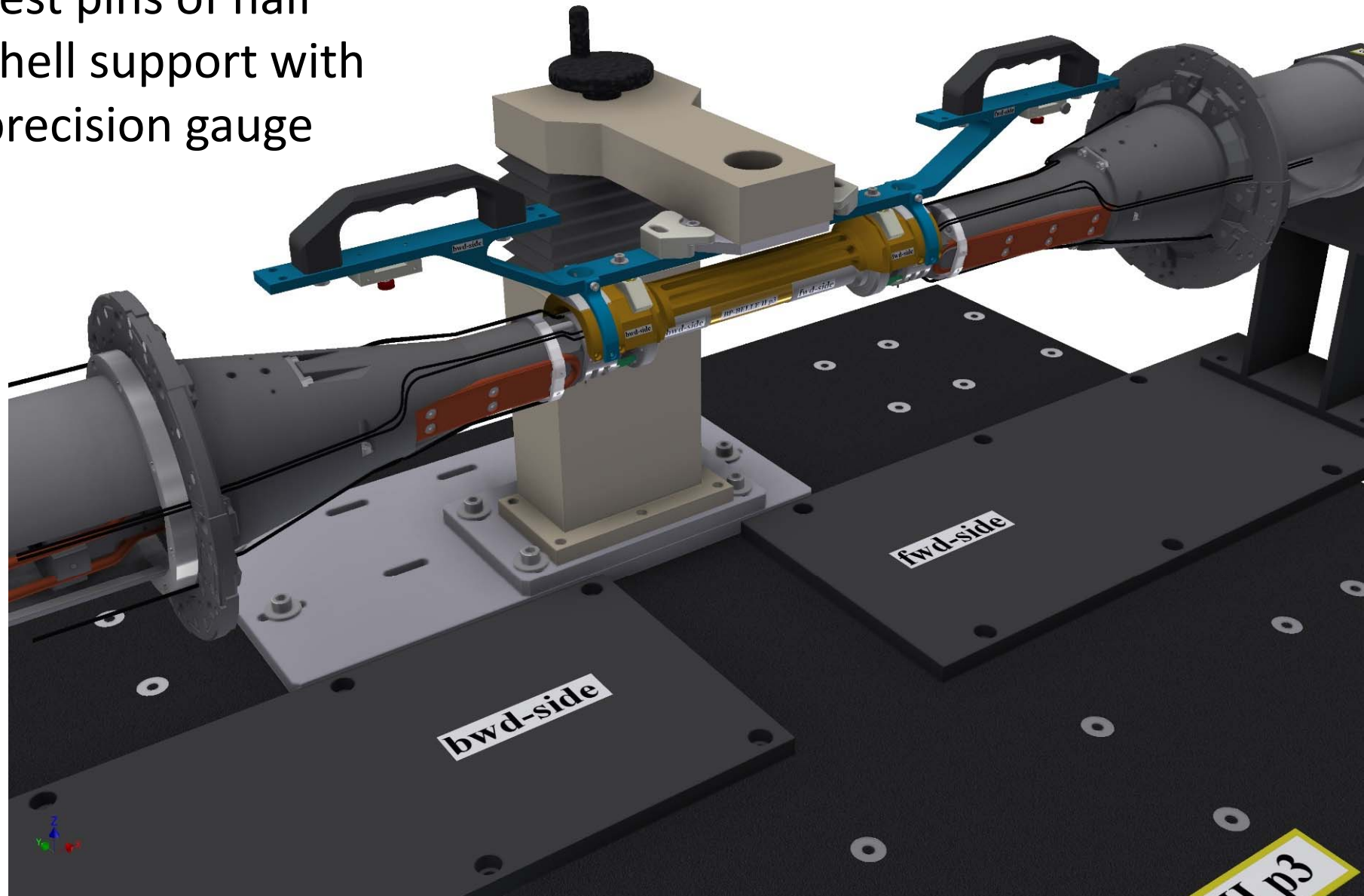
# Half Shell Grabbing Tool





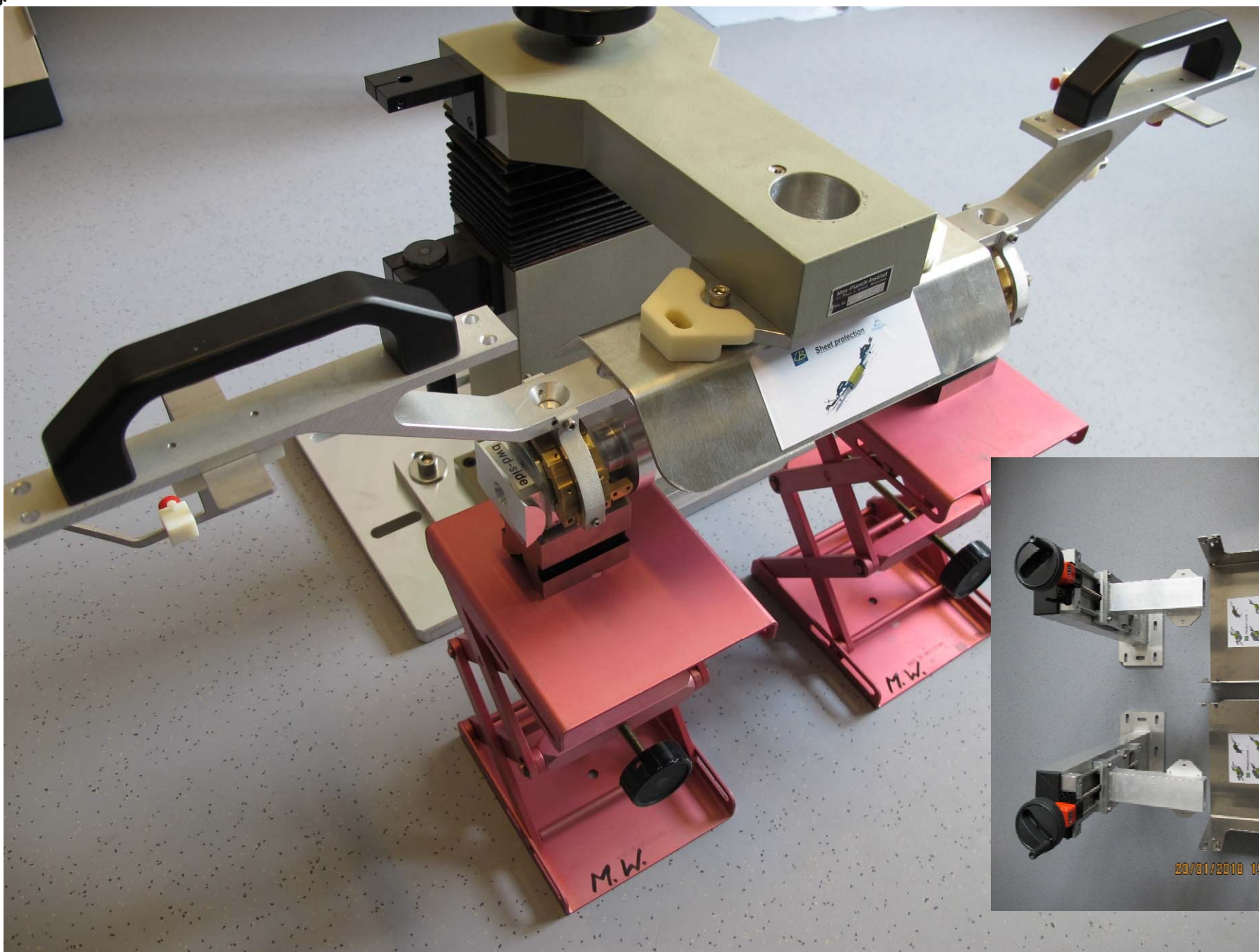
# Half Shell Mounting Tool

Test pins of half shell support with precision gauge





# First Half Shell Mounting Exercises

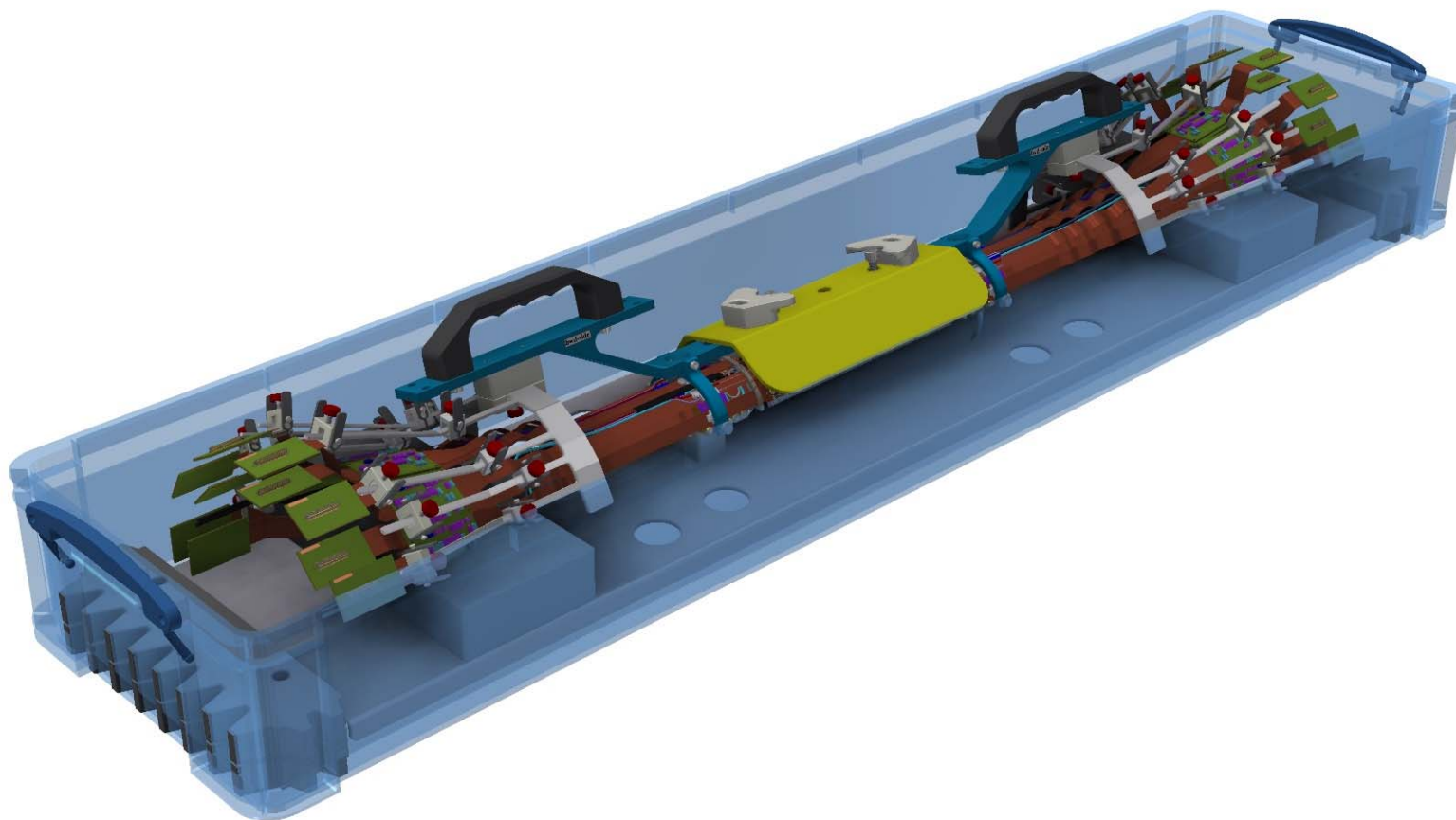




## Transport Box for the Half Shells



## Transport Box for the Half Shells



# Summary and Next Steps

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- Ladder mounting procedure for Phase 3 is designed
- Mounting tools have been optimized and are produced
- Complete mounting test with dummy ladder after B2GM
- Goal to be ready to mount hot ladders by beginning of March, followed by shipping of complete L1 half shell to DESY for full test with CO<sub>2</sub>