

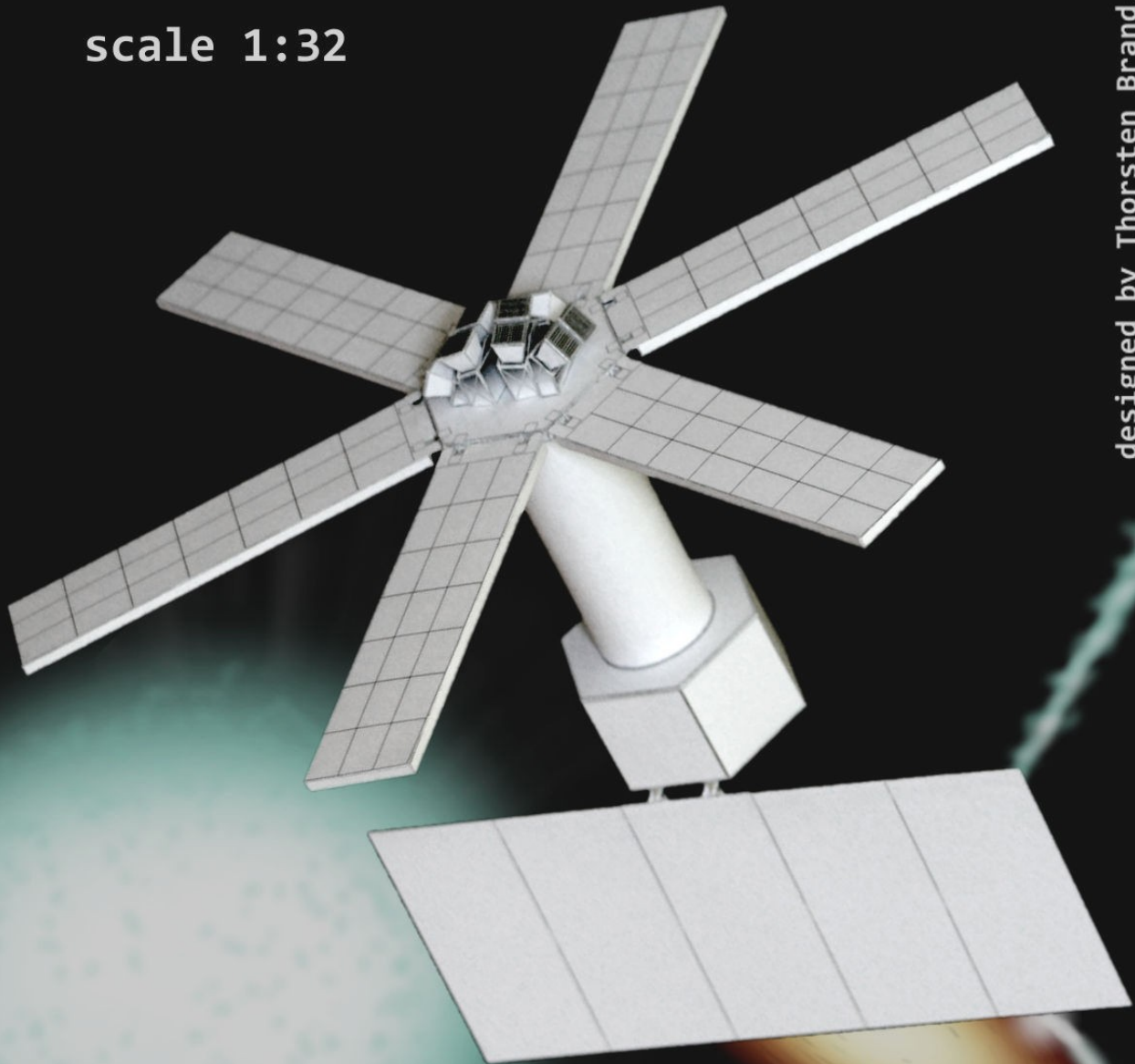


LOFT

LARGE OBSERVATORY FOR X-RAY TIMING

Paper Model

scale 1:32



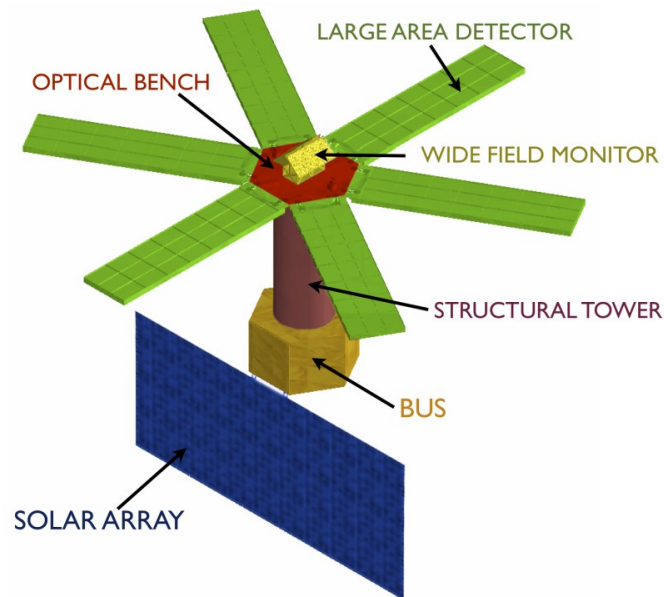
designed by Thorsten Brand. 2012.



ERLANGEN CENTRE
FOR ASTROPARTICLE
PHYSICS

This is a model kit for a 1/32 version of the current (2012) iteration of the **LOFT**-spacecraft.

LOFT is short for **L**arge **O**bservatory **F**or **X**-Ray **T**iming. It is a proposed space telescope which could start its mission in the early 2020s. The satellite has two scientific instruments, the **L**arge **A**rea **D**etector (**LAD**) and the **W**ide **F**ield **M**onitor (**WFM**). They are placed on the **O**ptical **B**ench, which is connected to the **B**us via a **S**tructural **T**ower. A large **S**olar **A**rray generates the electricity.



<http://www.isdc.unige.ch/loft/index.php/instruments-on-board-loft>

The diameter of the **LAD** will be almost 30cm when completed. A some parts have to be built several times, the construction time is at about 8h.

The parts sheets have to be printed on white paper with a weight of about 160 g/m². For correct scaling, the "Fit to page"-function of your printer has to be disabled.

Besides paper, you will need:

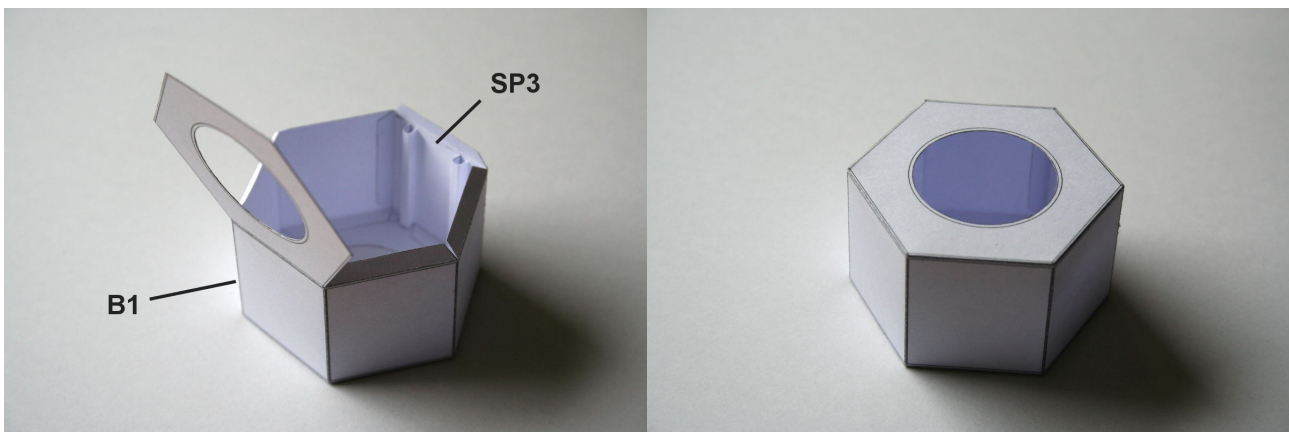
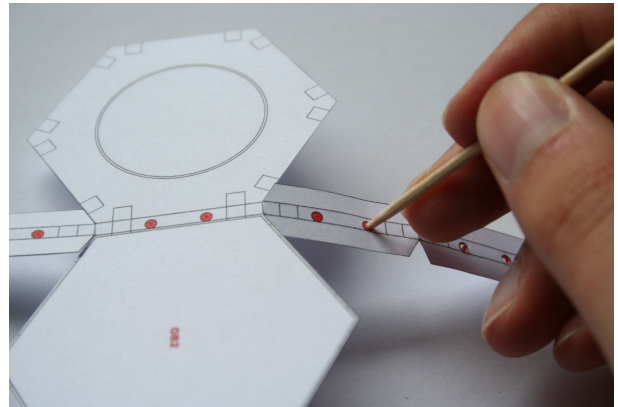
- scissors and/or a hobby knife
- a ruler
- a needle or an old edgeless knife
- glue (don't use a glue stick)
- 14 wooden toothpicks (round, 2mm dia)



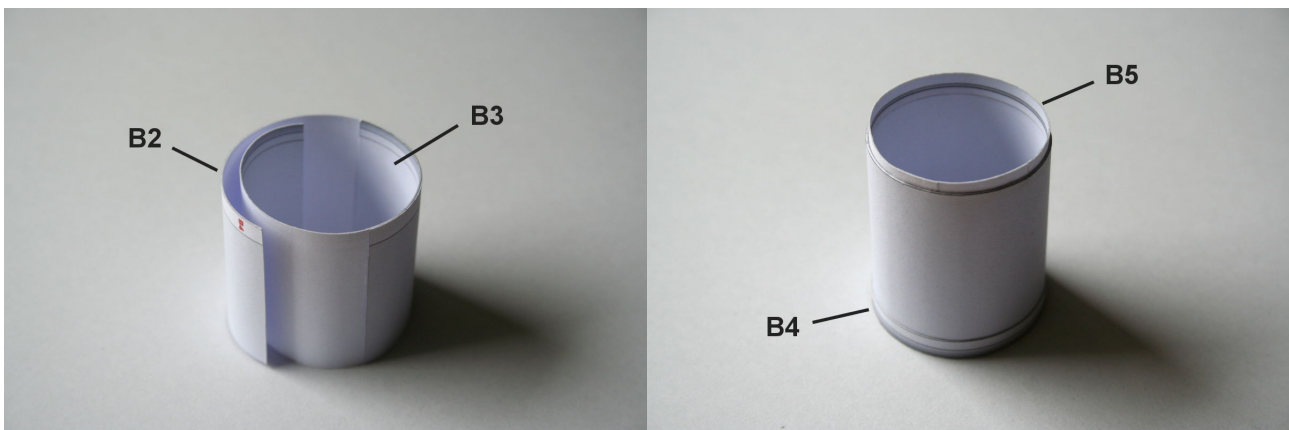
Before you cut out the parts, take the needle and score all fold lines. They are indicated by dashed (mountain fold) or dash-dotted (valley fold) lines beside the parts.

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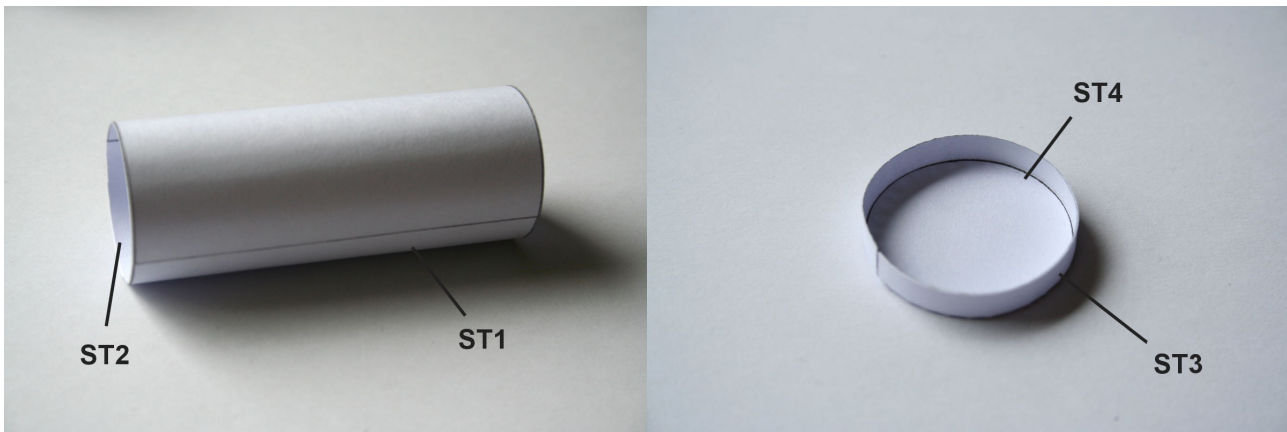
At parts **B1**, **OB1** and the six pieces of **LAD2** there are red circles. Pierce them with a pointy needle or scissors and carefully widen them with a toothpick, until the black outline is reached. This is done at best before the parts are cut out.



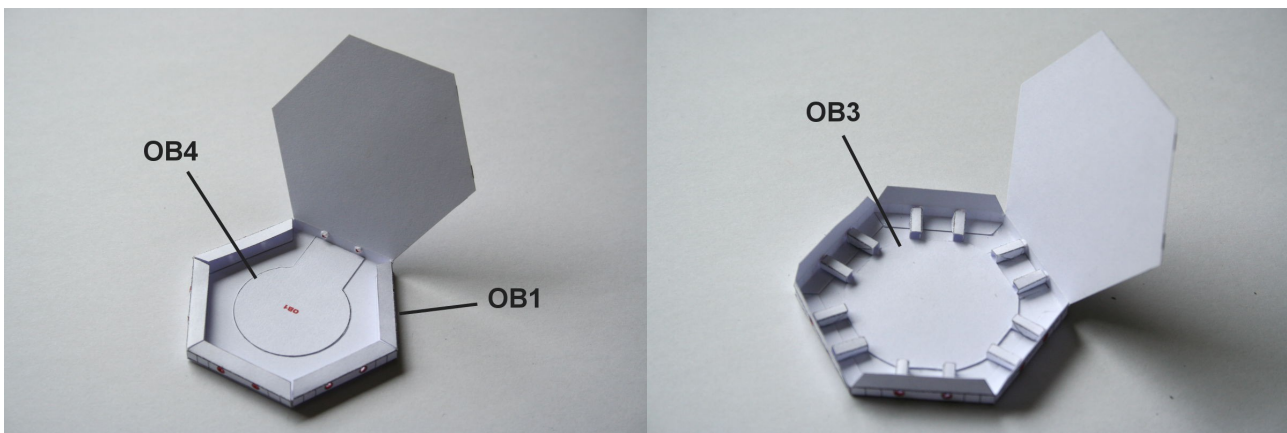
The hexagonal Bus is built up from part **B1**. Glue the folded part **SP3** to the inside of the face above the red holes, forming two channels.



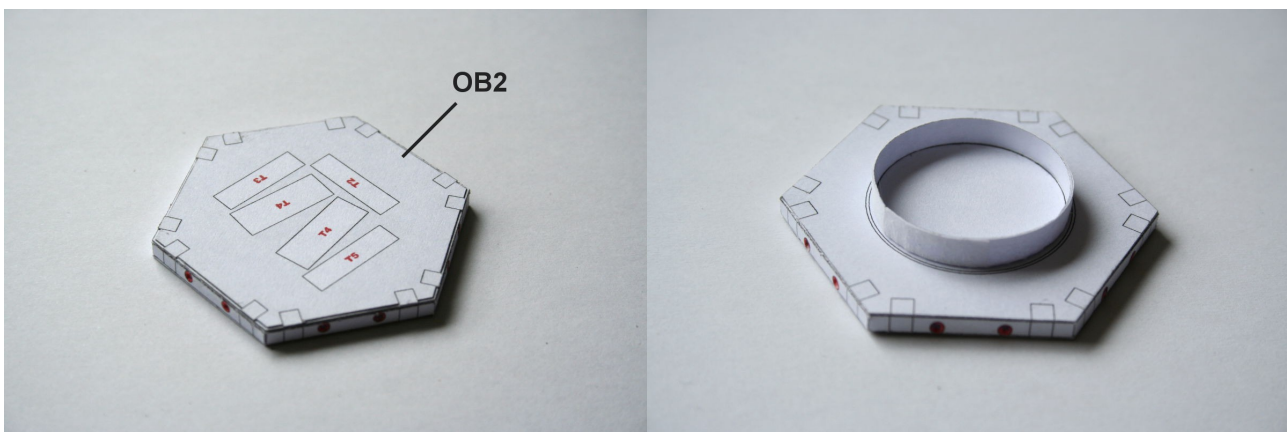
Roll parts **B2** and **B3**, and glue them to a cylinder with **B3** in the inside. Be careful with their orientation: the grey joiner stripe for **B5** has to be on the opposite end of the cylinder than the white stripe for **B4**. Afterwards, glue **B4** and **B5** to these stripes.



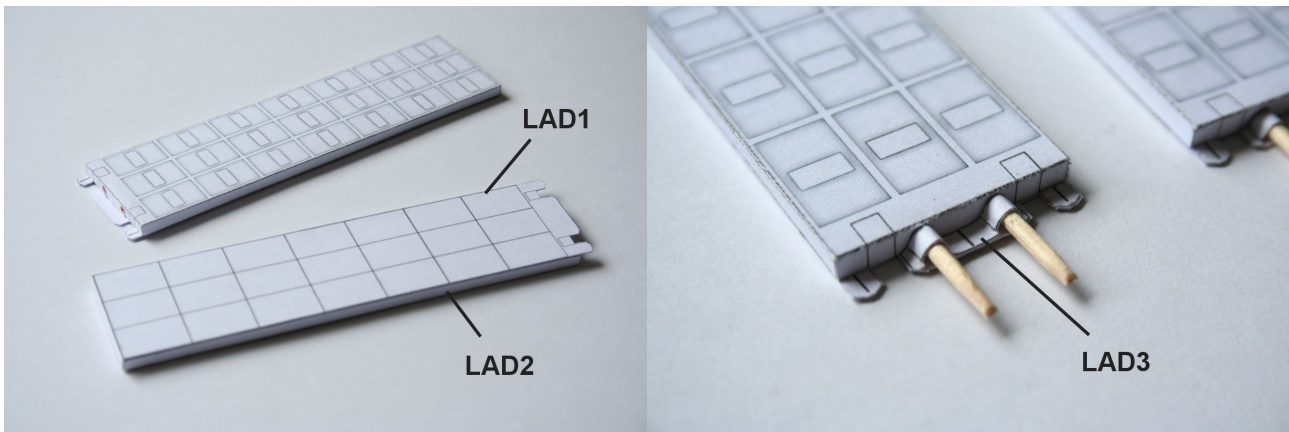
In a similar way, make the cylindrical Support Tube from parts **ST1** and **ST2**. Part **ST3** has to be rolled around part **ST4**, with the tabs of **ST3** glued to the circle from behind.



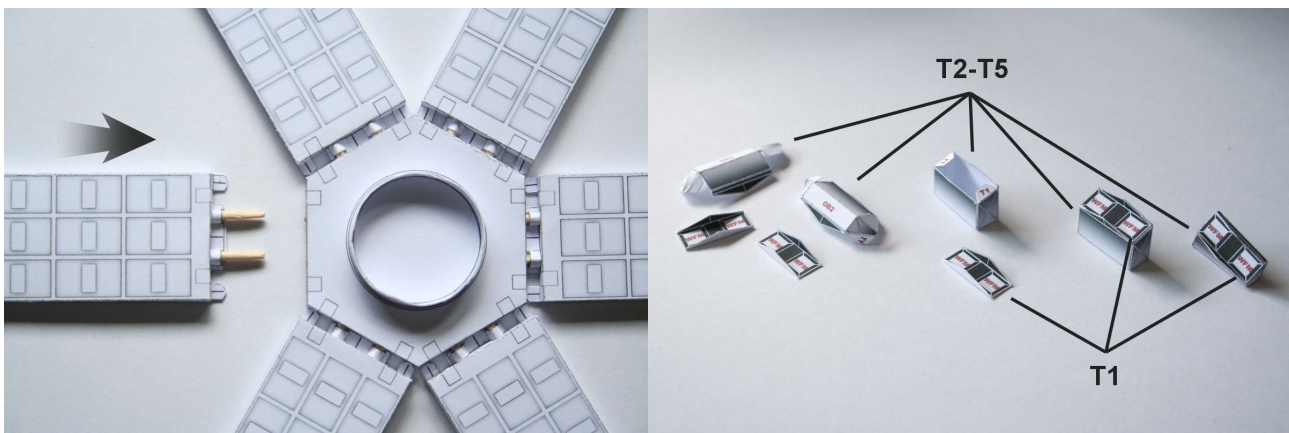
The Optical Bench is formed from part **OB1**. First glue the sidewalls with the holes only to the hexagonal face with the circles on it, and add **OB4** to its inside. Then assemble part **OB3** with its 12 rectangular tubes and glue it onto **OB4**, so that the tubes sit behind each hole of **OB1**.



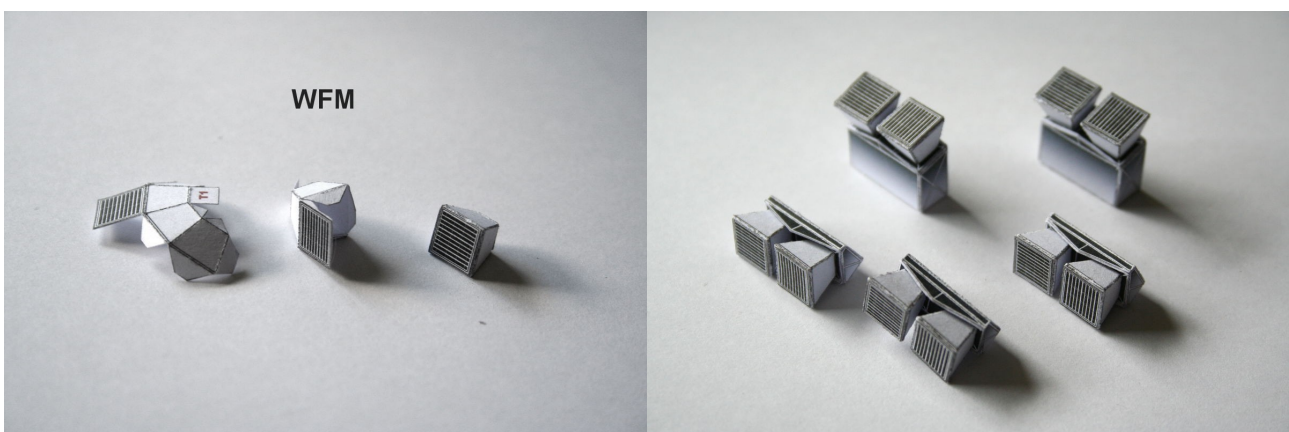
Close the part and glue **OB2** to its place, and **ST4** centered onto the circle on the other side.



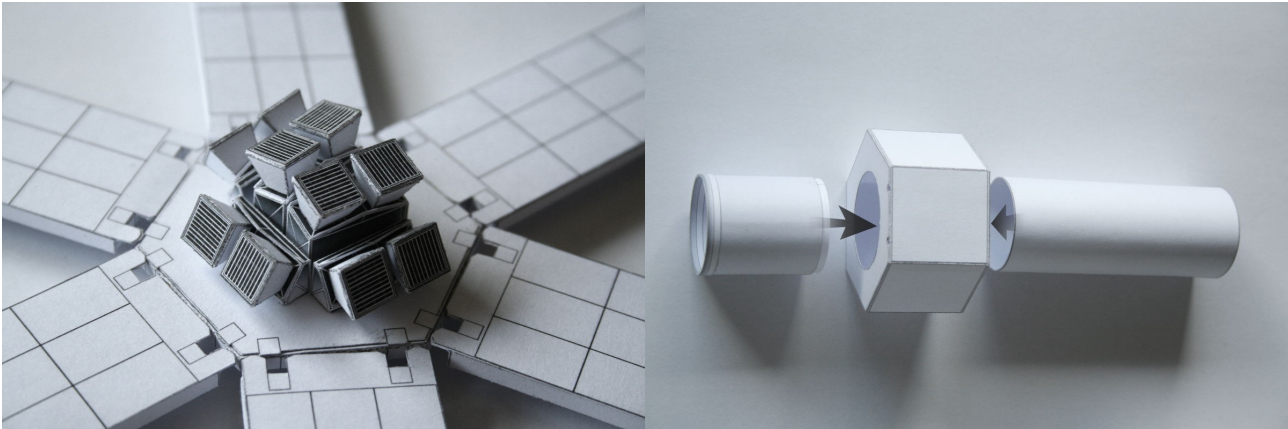
The LAD-panels are built up from parts **LAD1** and **LAD2**. Push one toothpick into each hole in **LAD2** so that about 2cm of them stick out and add part **LAD3** over them like seen in the picture.



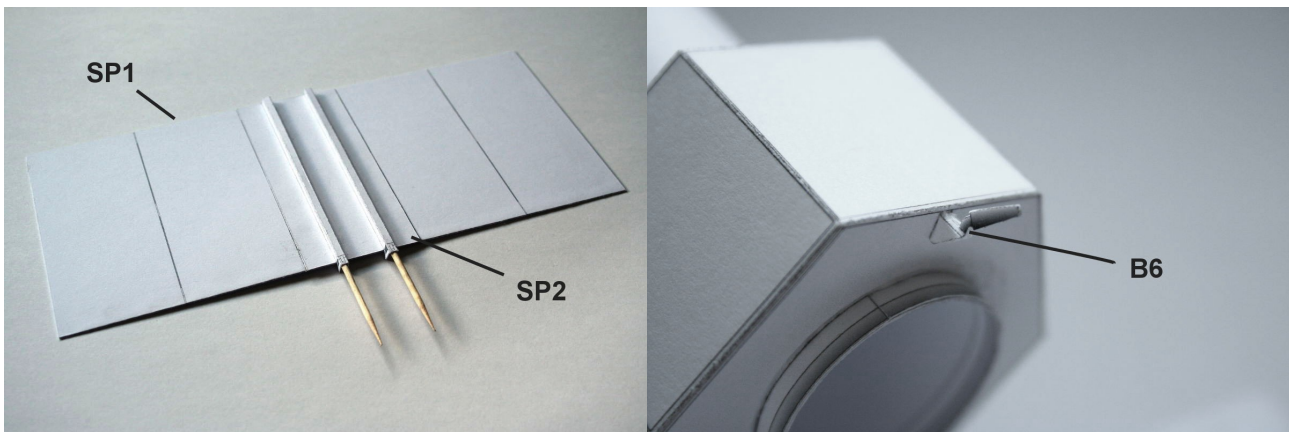
Push the toothpicks of the LAD-panels into the holes of the Optical Bench, and fix them with glue. Form five support trusses from parts **T1-T5** like seen above.



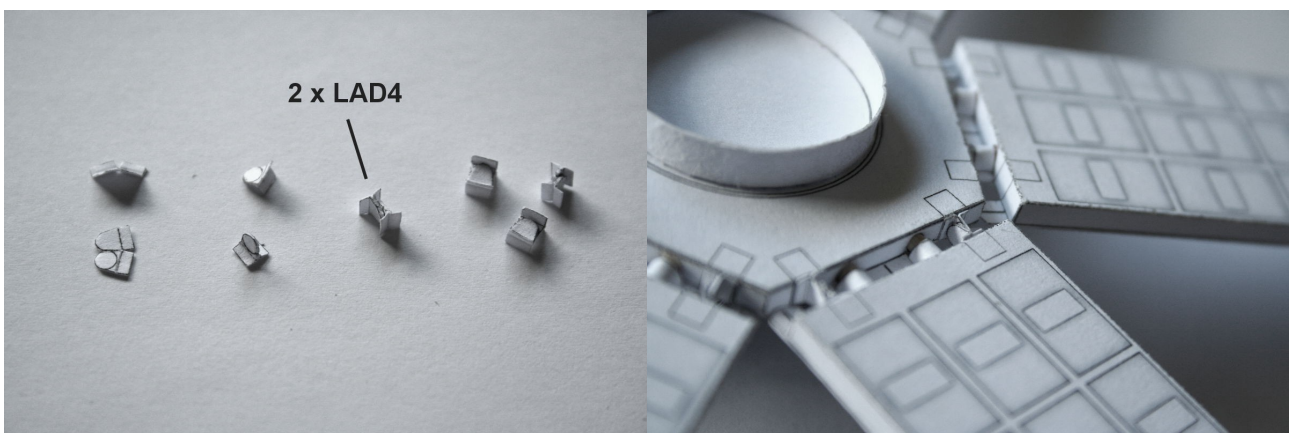
Make the ten WFM-cameras from parts **WFM**. Glue two of them to each of the support trusses. The stripes (Coded Masks) of the two cameras of one unit should be perpendicular to each other, the left one being horizontal, the right one vertical.



Glue the WFM-units to their places on the **OB1**. The smaller tube (**B2-B5**) is pushed into the big hole in **B1** from the side with the two small holes, until **B5** sticks out of the hole on the other side of **B1**. From this side, the long tube (**ST1-ST2**) is then pushed over **B5** and fixed with glue.



The Solar Panel is formed from part **SP1**, which is folded in the middle and glued together. Then **SP2** is added to its place, after it is folded like part **SP3** was at the beginning. A toothpick is glued into each of the channels of **SP2**, with about 2.5cm sticking out. The Antenna is formed from part **B6** and glued to the small rectangular area on **B1**.



As an **optional detail**, two parts **LAD4** can be assembled to a hinge and glued between the optical bench and the LAD-panels.

The model can be finished now. Push the Solar Panel Array's toothpicks into the small holes in the Bus. Then glue the optical bench onto the Support Tube, guided by part ST3. Thereby, the WFM-unit with part T2 has to be oriented to the other side than the Solar Arrays.

The model is now finished!

