3D Imaging Dome In-air Demonstrator

3D Print Order with Stratasys

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SLAC MAGIS Group Meeting

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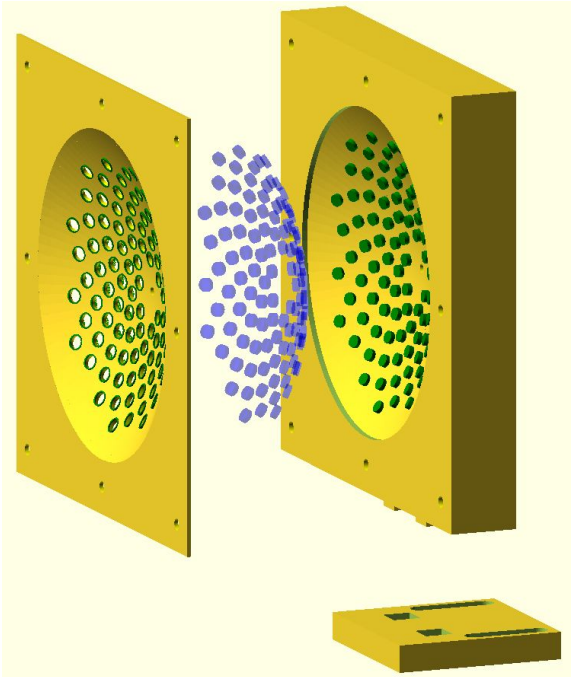
U.S. DEPARTMENT OF ENERGY
Office of Science

SLAC NATIONAL ACCELERATOR LABORATORY

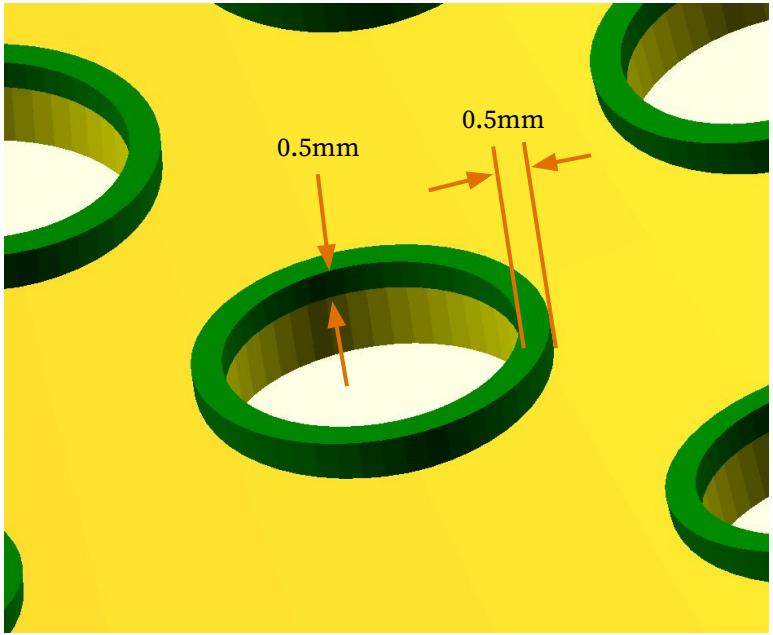
3D Print Discussion with Stratasys

- Some more discussions over the last week
- Printing technologies discussed
  - Fused Deposition Modeling (FDM)
  - Laser Sintering (LS)
  - Stereolithography (SLA)
- Some thoughts on printing orientation
  - Particularly for the front-board



Comparing Different Printing Technologies

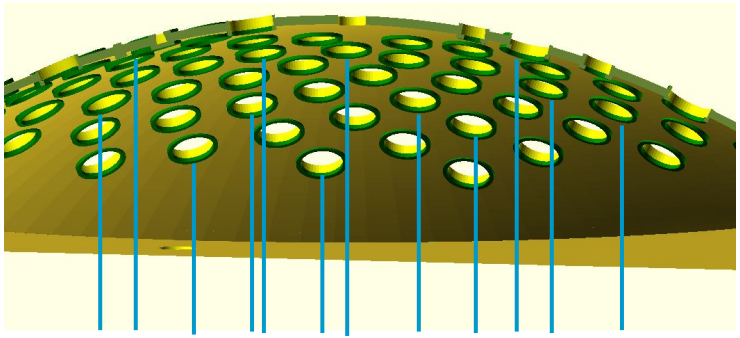
	Fused Deposition Modeling (FDM)	Laser Sintering (LS)	Stereo-lithography (SLA)
Smallest Feature Size	0.028” (0.71mm)	0.03” - 0.05” (0.76mm - 1.27mm)	0.004” - 0.010” (0.10mm - 0.25mm)
Total Price	$846	$697	$922

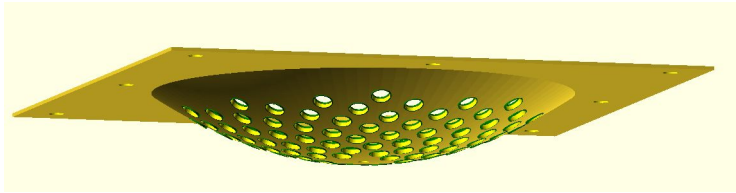


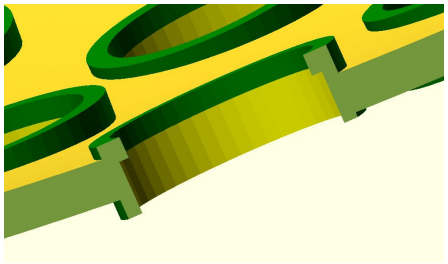
- The front stops have **0.5mm nominal features**
  - FDM and LS are not really an option
- **SLA excels in terms of small features**
- Cons:
  - Less stiff/rigid than LS
  - Expensive

Printing Orientation & Support Structure

- My original suggestion: face-down orientation
  - Vertical support structures at the bottom
  - The front-stops might be damaged/removed when removing the supports
  - “We just can’t guarantee that the features will come out on the side that is supported.” -Stratasys Project Engineer
- Alternative: face-up orientation
  - Rear side details do not matter
  - Can be completely washed out
  - **Decided to go with this approach**
  - Con: the front-stop will be “floating” without supports during printing







Final Quote

	Base	5.1mm Hole Front Board	5.2mm Hole Front Board	LS Board	Object Rod	Total
SLA	$115	$115	$115	$605	$82	$1032

- Stereolithography with Somos WaterShed XC 11122
  - Smallest feature size: 0.004” - 0.010” (0.10mm - 0.25mm)
  - Our smallest feature is about ~0.5mm
- Total price of $1032
- Hopefully this is our last order for the in-air demonstrator!