Functional Requirements	Strategy	Physics	Risks	Counter-Measures
Align the foils parallel to each other to achieve 7 arc second resolution. This corresponds to placing the front face of the foil to within 2 microns of its intended position	Align foils using MEMS fabricated micro-combs with reference to a flat plate	Accuracy of combs to flat plate, mechanics (cantilever beams, simply supported beams)	Reference flat gets deformed when combs are placed against it	Carefully stop combs at first sign of contact
			The combs become chipped when pressed against the reference flat	Careful/ slow placement of combs
			Reference flat gets deformed when attached to the rest of the structure	See conceptual designs
			Reference flat gets scratched	Minimize touching of reference flat
	Stack foils with spacers in between them	Friction, Mechanics of Materials	Spacers scratch foils	Use low coefficient of friction material/ work in clean room
			Sheets are different shapes	Machine different shaped spacers
			Stack up error because of different foil thicknesses	?
	Real-Time measurement of distance between foils coupled with movement of each corner of the foils	Measurement Technology	Slow process (100 sheets x 25 modules)	Spend more money/ time
			Measurement error	Survey measurement technology
			Actuation too coarse	Use sub micron capable stepper motors/ linear stages
Foils must be fixed into place inside a rigid lightweight structure for transport to space	Fine alignment is done by one "Assembly Fixture" for all of the flight modules	Proper alignment, geometry	Foils can be damaged while in "loose" configuration	Handle carefully
			Deformation can occur if flight module is held differently in alignment and in use	Design to hold assembly in same configuration as test fixture; Kinematically hold the fixture in both places
	Alignment proccess and fixtures exist on every flight module	Proper alignment, geometry	Added complexity to flight module	Fine alignment structures are removed and thrown away
			Added weight to flight module	Fine alignment structures are removed and thrown away
Structure must withstand launch conditions while permitting entrance and exit of X-Rays	Build out of material with a natural frequency higher than 100 Hz	Acoustics, vibrations	Foils can break	Hold foils in more than the minimum 3 points (recommend 8)
			Foils can shift positions	
			Structure permanently distorts	Build structure out of one material
				Assemble structure at same temperature as it is used
	Fill structure with foam peanuts		Disposal of foam in space.	?
Structure must maintain accuracy in space	Use monolithic material and design the center of thermal expansion to be in the middle of the structure	Thermal expansion	Not enough torsional stiffness in the flight module.	Proper material choice