The "Debster Beta" DATS/Parvati style solar cooker!
Objective: Make a durable, home-made version of the Parvati/Double-Angled-Twelve-Sided cooker

Materials:
Heavy duty shell: 400x300 Denier Cross Dyed Nylon/Polyester Mini Diamond Coated Ripstop, 3 yards
Reflector panel "trapezoids" from thin cutting mat plastic: LDPE 12"x15", about 1/16" thick. Ordered 30 mats, used about 16.
Reflective material found at fabric store: "Insul-Shine" polyester 94", polyethylene 6%, and
Food-grade tubing used for making beer: ATP Value-Tube LDPE Plastic Tubing, Natural, 1/4" ID x 3/8" OD.
Yaetek Plate 8"x8" Lab jack scissor stand platform ($23) which will hold a pot flat, while also adjusting the angle of the reflector "Stalks" of 1/8" steel rods, 36" long.

I "eyeballed" the placement of the trapezoids which will fit into pockets of reflective material. I hot-glued these in place.

I removed the fluffy insulation that was spot-welded to the reflective/silver side, then hot-glued the reflective material onto the nylon, over and around the mat trapezoids, tried to line up as close to the center between trapezoids as possible.

Hot glued everything so I could test this before sewing everything more permanently in place. If the test runs well, I might just leave it hot-glued together until it starts unravelling, to see how long it lasts :)
I decided to leave off the "A" tabs, as I wanted a hole in the bottom to accommodate the scissor jack. Left the proportions for B and C panels the same.
I conscripted my sister Deb for her Mad Sewing Skills, and in her honor, I am naming this version of a Parvati/DATS-style cooker, "The Debster." Deb sewed the piping that the tubes slide through, one edge of the reflective material, and the pockets that each end of the steel "stalks" slide into for rigidity. This is the Debster Beta Version!
Dimensions of single section are given in Fig.1. These dimensions are for cooker having rim diameter of 2 feet. For rim diameter of 3 feet and 4 feet multiply these dimensions by 1.5 and 2 respectively. This is for 4 feet--

To simplify the construction we decided to make it out of single sheet of aluminum or cardboard instead of making multiple section and joining them together. Apart from simplifying construction this strengthened the cooker. Take a rectangular sheet of dimension 24” * 48” (48x96). Draw a semicircle of 24” (48) radius. Divide this semicircle into 12 equal parts by replicating 12 times the drawing of single section. Complete drawing resembles as shown is fig 3. The drawn portion is cut along the edge. You will have the sheet now as shown in fig 2.
Yaetek Plate 8"x8" Lab jack scissor stand platform  $23

Replaced the solid plate with a cooling rack, painted black, held in place with the original plate screws, and modified washers to hold the grate in place. Front of lower rim of reflector will be fixed to bottom front of jack, back of lower rim fixed to back of grate, with bungee or other means so it won't distort the reflector.
To make this an all-season cooker, the bottom rests on the ground but the hole in the back will be fixed to a scissor jack, which I got from a laboratory supply, removed the solid steel platform and replaced it with a standard cooling rack, painted black. The idea is to fix the top of the hole in back to the middle or back of the scissor jack, and raise the rack/platform to grab the lower sun in winter, and lower it for a summer setting.
The dimensions are about 1.5x the size of Parvati / double-angled twelve-sided (DATS) plans available online. This made it a bit ungainly to assemble, sliding the food-grade tubing through the pipes e.g., more friction and binding with each inch slid through. Took 1/2 hour of finagling, but it worked. Plans at:
OK, so I got greedy, and the 4" diameter made for too-floppy of a parabola. For extra stiffness, I used 36" lengths of 1/8" steel rods, bent at the ends to form tabs, which are inserted into pockets at the top outside rim and inside bottom rim. These worked to a point, but I needed three extra rodes to prop up the circle; next iteration the rods will be re-bent at the ends to lengthen them by up to an inch. Also, each rod has a circle bent into the middle, for future possibilities such as bending the rods to match the angles at the cooker's waist. Either way, it will probably still need the extra rods crossing over from one side of the outside edge to the other. I used two Pyrex bowls for a heat trap. It's not too clear but on this March day at around 12:30 the temp approached 250oF/130oC. Considering how ragged the reflector cloth got after all the sewing (it is held on only by hot glue), that's acceptable for this "beta" version!
Restoring the hot glue spots for the reflectors, extending the stalks and adding 2 or three rods to cross over the top, and adding velcro straps for the bottom ring to grab onto the scissor jack/focusing platform, should make this a reasonably hot cooker. My original goal was to make it as portable/collapsible as possible, I will take my learnings from this one to apply to the rest of the red ripstop, reflector fabric, and tubing for the "Debster 1.1" version :) Q's? Email kruegerian@gmail.com