

TOROIDAL POLYHEDRA

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The main purpose of this exhibit is to show models of the folded toroidal polyhedra that I will present in the paper "Folded Toroidal Polyhedra." I have a large collection of models made from paper and plastic. The models show many different aspects of symmetry. In particular the folded polyhedra show how the symmetry of different tilings of the plane can be used to create toroidal polyhedra of different symmetry types. Most of the models are monohedral and idemvalent. That is, all of the faces are congruent and all of the vertices are adjacent to the same number of faces. Common examples of monohedral idemvalent polyhedra are the Platonic solids. And although there are combinatorially infinitely many possibilities for toroidal polyhedra with these properties, until now only a couple of examples were known.

I have about 20 models ranging in size of six inches in diameter to two feet in diameter. There is also one model I would like to include that is about four feet by four feet by 1 foot. My thought is to display them in a display case of some sort. The large model could be hung as well.

All of the models fit squarely into the category of Polyhedral Symmetry since they all exhibit a high degree of both combinatorial and geometric symmetry.