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**Brittany P. Baker\*** (bbaker@smcvt.edu), **Patrick Dukes**, **Elias Halloran**, **Anne Ho**, **Audrey Hubbard**, **Alexander James**, **Victoria McCoy** and **Robert Rumely**. *The Origami Box Problem*. Preliminary report.

**The Origami Box Problem:** What is the largest volume that can be enclosed by folding a square sheet of paper, one unit on a side, into a closed box?

We consider different origami boxes with increasing volumes in our attempt to find the maximal volume of an origami box. We have not solved this problem; as will be seen, a solution would require a deep understanding of curved paper surfaces. However, we analyze a series of designs with larger and larger volumes, and we identify a class of designs, which we call Inflated Sealed Sacks, to which the optimal design likely belongs. We believe that our best design is within a few percent of the optimum.

After doing this research we found significant related work done under similar names, “Paper Bag Problem” or “Tea Bag Problem”.

We finish with a few related open questions in origami, including our own origami cup problem. **The Origami Cup Problem:** What is the largest possible volume of a cup folded from a square sheet of paper, one unit on a side? (Received February 12, 2011)