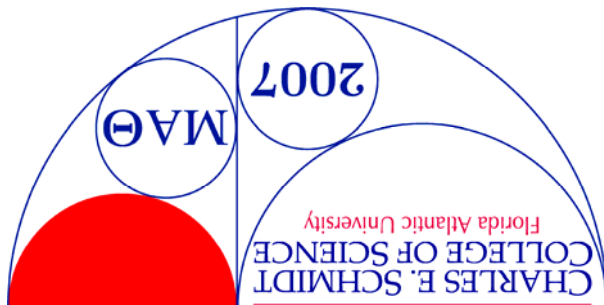
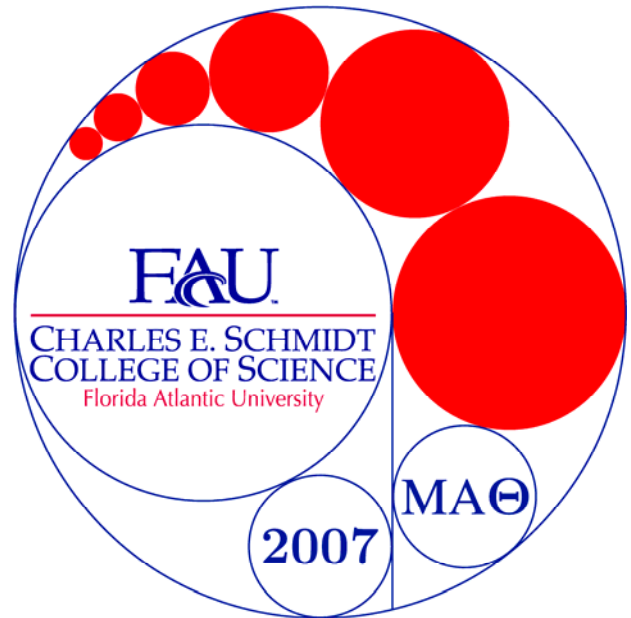


# Archimedes' Frisbee

Prof. Paul Yiu designed the MA $\Theta$  frisbee based on a geometric figure called *arbelos* which means *shoemaker's knife* in Greek. This term is applied to the shaded area in the figure below which resembles the blade of a knife used by ancient cobblers.



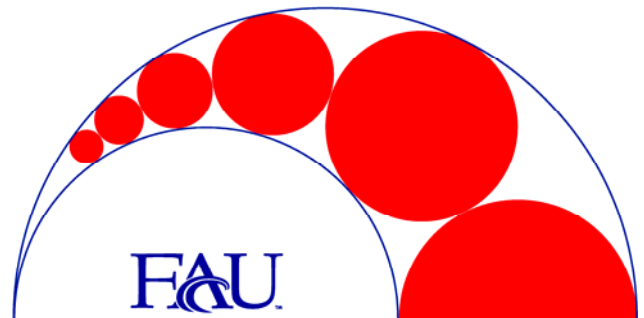
The arbelos is constructed by three semicircles where the position of their central notch is arbitrary and can be located anywhere along the diameter of the outer semicircle.



Archimedes is believed to have been the first mathematician to study the properties of the arbelos. In his *Book of Lemmas* he proved that the two circles labeled "MA $\Theta$ " and "2007" on our frisbee have the same size. This is always true no matter where we place the central notch of the arbelos. These two tangent circles are called the *Twin Circles of Archimedes*.

In the upper half of the frisbee an arbelos is used again. Here, a chain of tangent circles is constructed inside the three semicircles forming the arbelos. This chain of circles is called the *Pappus chain*.

See [www.geogebra.org/talks/200701-frisbee](http://www.geogebra.org/talks/200701-frisbee) for more information and an interactive construction of the MA $\Theta$  frisbee.



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