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**Amy F. Szczepański\*** ([szczepanski@math.utk.edu](mailto:szczepanski@math.utk.edu)), Math Department, University of Tennessee, Knoxville, TN 37996. *Calculating Patterns for Knitted Surfaces.*

We present a method for calculating the pattern for knitting some geometric shapes (such as spheres and tori) that can be described as surfaces of revolution. Each of these shapes can be knit as a series of circular rounds. Writing the pattern can be reduced to a problem of determining how many stitches should be in each round and how many rounds are needed. Some approximations will need to be done, as rounds must have a whole number of stitches, and the overall pattern must have a whole number of rounds. The number of stitches in each round can be calculated by using a parameterization of the curve, rotation matrices, and approximations of arclength. We present a description of the method and software that has been written to calculate some patterns. (Received September 14, 2008)