Approximate Tiling of 2D Regions with Lemniscatic Sectors

M. Paluszny[1] **and M. Lentini**[2]

Abstract: We consider the problem of decomposing 2D paths so that each tile can be approximated with a region bounded by two confocal lemniscates and two lemniscatic rays. The latter is referred to as a lemniscatic sector if it does not contain any zeros of the derivative of the polynomial that defines the lemniscates. We deal with the issue of continuous joining of lemniscatic tiles along common lemniscatic rays within a given tolerance. The main applications are in the automatic generation of orthogonal grids with good control of aspect ratio and which are well adapted to the region boundaries, texture recording and data compression.

[1,2] Escuela de Matematicas
Facultad de Ciencias, Universidad Nacional de Colombia, Sede Medellin
Medellin, Colombia
mpalusznyk@unalmed.edu.co, maclentinigi@unalmed.edu.co