Strategies of mapping not deployable surfaces with Islamic star patterns

Miguel Cabo Fernández

Technical University of Madrid (UPM)
School of Architecture of Madrid (ETSAM)
Departamento de Construcción
Madrid, Spain

ABSTRACT

Islamic star patterns had a very important development especially in hispano-muslim wooden ceilings between XI-XVII c. Its developing began mapping the plane but hispano-muslim carpenters soon tried to colonize the three dimensions space by means of polihedrycal surfaces. They got cross sections having 3, 5, 7 and 9 panels approaching barrel vaults by mapping polygonal surfaces. Next step was to get curved surfaces approaching polygonal panels to simple curved surfaces as cylinders, which was very ease to make. They also approach spherical surfaces by means of polihedrycal surfaces sectors. Problems began when trying to get properly spherical surfaces as domes. Most obvious strategy was try it dividing in sectors the sphere by meridians and parallels. This was most common method used in carpentry. Only one case was carried out at Alhambra using sphere partitions based on Platonic solids. Inspired in Hispanic traditions, this conference offers new methods of mapping not deployable surfaces with Islamic star patterns.