

3D-Dynamical Geometry in Building Construction

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Workshop Proposal for the ACDC A strand

ABSTRACT

In Architecture and Technical Architecture Degrees, students use CAD tools (*Computer Aided Design*) which are not capable, in general, of representing graphically curves or surfaces starting from its corresponding equations. To get it, users have to define specific macros or they have to create a table of points in order to convert a set of nodes into polylines.

CAS tools used in Math classes allow this graphical representation of curves and surfaces starting from their parametric equations. However, they lack the dynamical development given by CAD tools, which plays a main role in the mentioned degrees. In this sense, the complementation of the algebraic and geometric tools included in the software of dynamic geometry, *Geogebra*, is an attractive alternative to design and model, from a mathematical point of view, curves and rigid objects in the space. The use of sliders related to the Euler's angles and the possibility of generating tools which project 3D into 2D, makes easier this kind of modeling.

In the current workshop, we will show how to construct 3D-models of several architectural constructions which have been made in the context of the subject called *Mathematics for Building Construction II*, corresponding to the Building Construction Engineering of the University of Seville, which has been implemented this academic year 2009-10.

Keywords

3D-modeling. Building Construction modeling. Perspectives and projections. Dynamic geometry. Geogebra.