



## **Polyhedral Surfaces in Architecture**

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### **ABSTRACT**

Polyhedral surfaces are great candidates for the realization of complex surfaces in architecture: They are composed of flat faces (panels) and are capable of approximating arbitrary shapes. A particularly interesting class are the so-called principal meshes, which are discrete versions of principal surface parameterizations. Their faces are nearly rectangular, they possess elegant support structures and turn out to be optimal approximations of surfaces for an energy which measures the “smoothness” of a polyhedral surface. Principal meshes in force equilibrium are discrete representations of surfaces on which principal curvature lines and principal stress lines coincide. Among those are architectural forms which minimize the material usage of the support structure. The talk will provide an introduction into this subject, outline the relations to discrete differential geometry and address key issues for computational design and optimization.