

# STABLE MATCHINGS - AN APPLICATION FROM ARCHITECTURE

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ARCHICAD – an architectural modeling software – generates 3D models of complex roof structures based on *weighted straight skeletons* of closed contours of walls. The definition of the straight skeleton is based on a so-called wavefront propagation process [1]. While the propagation algorithm is straightforward for the general case, it may suffer from ambiguities in particular cases when multiple changes in the wavefront topology happen simultaneously and at the same locus. Recent research of Biedl et. al. [2] showed that the use of stable matchings helps to resolve most of these ambiguities in a way that ensures weak planarity of the wavefront contour. Still, in those cases when the stable matching problem has multiple solutions, selecting the most appropriate one for a particular application remains a necessity.

## References

- [1] Aichholzer, Oswin; Aurenhammer, Franz; Alberts, David; Gärtner, Berndt *A novel type of skeleton for polygons*. Journal of Universal Computer Science vol. 1 (1995), no. 12, 752-761.
- [2] Biedl, Therese; Huber, Stefan; Palfrader, Peter *Planar Matchings for Weighted Straight Skeletons*. International Journal of Computational Geometry & Applications vol. 26 (2016), 211-229.