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A synthetic account of Huygens' principle of wave fronts

This principle of geometric optics describes how a wave front B proceeds: at a later time, the new wave front is an *envelope* of the family of spherical *wavelets* emanating from points of B .

A synthetic/axiomatic account is presented; the crucial notion involved is that of *touching* of subspaces. This is here described synthetically, based on a primitive notion of when two points are (first-order) *neighbours*. The neighbour relation is reflexive and symmetric (but not transitive).

REFERENCES:

- [1] A. Kock, Metric spaces and SDG, *Theory and Appl. of Categories* 32 (2017) 803–822.
- [2] A. Kock, Huygens' principle — a synthetic account, *arXiv:1804.05649*.