

# SOME OPEN PROBLEMS ON INTERMEDIATE LOGICS DETERMINED BY CLASSES OF POLYHEDRA

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In a recent paper [1] we showed that a formula is provable in the intuitionistic propositional calculus if, and only if, it is valid with respect to valuations into the Heyting algebra of open subpolyhedra of  $P$ , as  $P$  ranges over all possible compact polyhedra. This completeness theorem, motivated by classical results of Jaśkowski and Tarski, leads to further questions. For example [1, Remark 6.1]: Can the intermediate logic  $\mathcal{M}$  determined by all polyhedra which are PL (=piecewise-linear) manifolds be reasonably axiomatised? Is  $\mathcal{M}$  decidable? Both questions are open. The purpose of the talk is to discuss these and possibly a few other problems related to the algebra and logic of polyhedra, in the hope of stimulating further research in the area.

## REFERENCES

- [1] N. Bezhanishvili, V. Marra, D. McNeill, and A. Pedrini, *Tarski's theorem on intuitionistic logic, for polyhedra*. Ann. Pure. App. Logic 169 (2018), p. 373–391.

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