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Symmetry classification of modular structures with groupoid families

Berthold Stöger[1]
[1]*X-Ray Centre, TU Wien, Vienna, Austria*
E-mail: bstoeger@mail.tuwien.ac.at

Modular structures are made up of distinct layers, rods or blocks. The operations relating equivalent modules are partial operations (POs), operating on a subset of Euclidean space. The composition of POs fulfills the group axioms with the exception of the closure. The corresponding algebraic structure is a groupoid [1,2]. Achieving a notion of equivalence of space groupoids is distinctly more complex than in the case of space groups and has not yet been tackled. Such groupoid families need not only abstract from metrics, but also from the particular arrangements of the modules. The basic formalisms developed for the category theory (diagrams, functors and natural functions) [3] can ease this task.

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