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A method of constructing compatible frame quasi-uniformities. (English summary)

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It is well known that in general, unlike a uniformity, a quasi-uniformity is not determined by its quasi-uniform covers. However, a classical and basic construction, due to P. Fletcher, which assigns a transitive quasi-uniformity to each family of interior-preserving open covers (on a topological space), allows one to describe all compatible transitive quasi-uniformities on topological spaces in terms of those families of covers.

In the present paper the authors develop a pointfree generalization of this fundamental construction, which solves a problem posed by G. C. L. Brümmer. They also discuss various important examples and applications that illustrate the usefulness of their ideas.

By using their construction, many kinds of interior-preserving open covers (e.g. locally finite, point-finite, spectrum, well-monotone) are shown to induce compatible quasi-uniformities on an arbitrary frame.

It may come as a surprise to the interested reader that an extension of the Fletcher construction from spaces to frames is by no means immediate. An important role is played by the sublocale lattice, or equivalently the frame of congruences, in the presented pointfree approach to transitive quasi-uniformities.

Reviewed by *Hans-Peter A. Künzi*