

Relations in Order-Enriched Categories

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Many situations among ordered structures call for relations that are compatible with order. These have been come known as weakening relations. In this talk, we will develop the general theory of relations internal to a category where the objects may or may not be concretely posets, but in which the morphisms are partially ordered. The categories suitable for this treatment are the order-regular categories first studied by Kurz and Velebil. In the talk, we characterize the weakening relation categories that correspond exactly to categories of internal relations on order-regular ones, showing that each weakening relation category determines an order-regular category and vice versa.