

We will continue online on Thursday, **July 16, at 1pm on [ZOOM](#) platform** (for information how to access seminar and next programme visit

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) by the talk:

**Charles Walker**

## **Characterization of Lax Orthogonal Factorization Systems**

Abstract:

In this talk we will study the lax orthogonal factorization systems (LOFSs) of Clementino and Franco, with a particular focus on finding equivalent definitions of them. In particular, we wish to define them as a pair of classes  $E$  and  $M$  subject to some conditions. To achieve this, we will reduce the definition of a LOFS in terms of algebraic weak factorization systems (defined as a KZ 2-comonad  $L$  and KZ 2-monad  $R$  on the 2-category of arrows  $[2, C]$  with a 2-distributive law  $LR \Rightarrow RL$ ) to a more property-like definition (meaning a definition with less data but more conditions). To do this, we replace strict KZ 2-monads with the property-like definition of KZ pseudomonads in terms of kan-extensions due to Marmolejo and Wood. In addition, pseudo-distributive laws involving KZ pseudomonads have a property-like description which will be used. Thus one can deduce the conditions the classes  $E$  and  $M$  must satisfy. We will also consider some similarities and differences between LOFSs and (pseudo-)orthogonal factorization systems, and will extend their definitions to include universal fillers for squares which only commute up to a comparison 2-cell. This is joint work with John Bourke, and is currently a work in progress.