

S E M I N A R

An Introduction to Effectus Theory

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Friday, 5 April 2024 @ 14h00-15h00 SAST

Venue: Online and Stellenbosch University Main Library: Research Commons
Virtual Meeting Room (Postgrad section, downstairs)

ABSTRACT

The context of an effectus is a new development in categorical logic which generalizes both classical and quantum logic. An effectus allows for a categorical formulation of quantum mechanics in which the effects of the quantum system are required to form an effect algebra (a generalization of the space of effects of a quantum system). In this talk, we introduce the context of an effectus and show that it provides new ways of

reasoning about quantum systems. In particular, the notion of pure maps is introduced for the context of an effectus. Pure maps are those that are the composition of a compression map and a filter map which corresponds to measuring and forgetting the validity of an effect respectively. Lastly, we show that conditions on a form (a faithful, amnesic functor) may be used to classify certain properties of an effectus.

BIOGRAPHY

Kishan Dayaram is a final year PhD mathematics student at the University of Johannesburg. He is supervised by Dr Amartya Goswami (UJ) and Prof Zurab Janelidze (Stellenbosch University). His research is on diagram lemmas of homological algebra. His research interests include category theory, group theory and homological algebra.

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