



Vrije Universiteit Brussel



Centrum voor Logica en
Wetenschapsfilosofie



THE CENTER FOR
process studies

The [Center for Logic and Philosophy of Science of the Free University of Brussels](#) has the pleasure to invite you to attend,

When: Wednesday, 12 December, 2012 [2:00-4:00pm]

Where: Free University of Brussels, Room D.3.10, [Campus Etterbeek](#)

What: A duo-lecture

FOUNDATIONS OF RELATIONAL REALISM:

On Relational Realism and the use of Grothendieck topology to construct a category-sheaf theoretic interpretation of quantum mechanics

Featuring:

Michael Epperson - process philosopher
(http://www.csus.edu/cpns/fellows/m_epperson.html)

and

Elias Zafiris - mathematical physicist
(<http://users.uoa.gr/~ezafiris/>)

"Foundations of Relational Realism" is the name of a project of which Michael Epperson is the principal investigator, Elias Zafiris and Stuart Kauffman two of the co-investigators, and David Finkelstein and Roland Omnès the main consultants (<http://www.csus.edu/cpns/research.html>).

"Foundations of Relational Realism" is also the title of a book by Epperson and Zafiris in press at Lexington Books / Rowman and Littlefield.

A key feature of the relational realism inspired by Alfred North Whitehead is that the ontological relational structure is a mereotopological relational structure. Epperson and Zafiris show that this structure (i) can be formalized by means of the mathematics of category-sheaf theory and Grothendieck topology and (ii) can be applied to quantum mechanics.

Moreover, Epperson and Zafiris' relational realist interpretation of quantum mechanics throws light on the problem of reconciling quantum theory and general relativity. The algebraic topological formalism of Grothendieck topology and category-sheaf theory provides the basis for relating the ontological interpretation of quantum mechanics with the metrical-extensive features of relativistic physics.

<http://www.vub.ac.be/CLWF>