

- MARIANA VICARÍA, *Sheaves of first order structures, existentially closed models and definable quotients*.

Department of Mathematics, University of Chicago, USA.

*E-mail:* [mvicaria@uchicago.edu](mailto:mvicaria@uchicago.edu).

In the 1950s, Mostowski and Feferman–Vaught established preservation theorems for products of algebraic structures. Their main result gives a quantifier elimination theorem for generalized products, reducing definability in the product to Boolean combinations of definability in the factors. Later, Macintyre generalized such construction to introduce sheaves of structures of a first order theory. Examples include the ring of adeles.

In joint work with Ehud Hrushovski and Mira Tartarotti we study a generalization of such construction to what we call the *booleanization* of a first order theory relative to a sub-language. We obtain a quantifier elimination result down to curves (bounded quantifiers) for such structures and we give an axiomatization of the existentially closed models—those such that if a variety has a point in some extension, then it already has a point downstairs. We also describe the definable quotients that one can obtain in such structures. Examples include the ring of algebraic integers (booleanization of algebraically closed valued fields) and the totally real numbers (booleanization of real closed fields), among others.