

Quantifier elimination, Deductive Interpolation and Craig Interpolation in Fuzzy Logics.

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Abstract: It is well known that quantifier elimination for a theory T implies the amalgamation property for the class of models of the universal fragment of T . If such a universal fragment is the equivalent algebraic semantics for a fuzzy logic L , then quantifier elimination for T also implies that L has the deductive interpolation. It does not imply Craig interpolation: counterexamples are easily provided.

The goal of this paper is to provide sufficient conditions, involving quantifier elimination, in order that a logic has a conservative extension with Craig Interpolation property. Known examples: divisible Lukasiewicz logic and product logic with roots are conservative extensions of Lukasiewicz logic (product logic respectively) with the Uniform Craig Interpolation Property (UCIP). In this talk we present a general theorem which guarantees that a fuzzy logic L has a conservative extension satisfying UCIP if one of the following conditions holds:

- (1) L is finitely valued;
- (2) $L=BL$;
- (3) L is Nilpotent Minimum.

Although I was not able to produce a paper which is closely related to Esakia's work, this paper is devoted to him: I think that we will all miss him very much.