



*Iranian Association for Logic*

## The Craig Interpolation Property in First-order Gödel Logic and Some of its Extensions

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### Abstract:

Craig interpolation property is one of noticeable properties in mathematical logic. It says if  $\varphi$  and  $\psi$  are two closed formulas in two languages  $\mathcal{L}_1$  and  $\mathcal{L}_2$ , respectively, with  $\varphi \vDash \psi$  then there is a closed formula  $\theta \in \mathcal{L}_1 \cap \mathcal{L}_2$  such that  $\varphi \vDash \theta$  and  $\theta \vDash \psi$ .

This property was verified in some non-classical logics as intuitionistic logic, Łukasiewicz logic and some fragments of Gödel logic. However, it is an open problem in first-order Gödel logic. Besides, some of its applications are in computing sciences and the theory of institutions.

In this seminar, first, the history of some attempts to solve this problem is reviewed. Second, it will be shown that this property holds in rational Gödel logic which is an extension of Gödel logic with adding some rationals as nullary connectives to the language. Finally, a model-theoretic approach is proposed to prove that the first-order Gödel logic,  $\mathbf{G}$ , as well as its extension  $\mathbf{G}^\Delta$  associated with first-order relational languages enjoy the Craig interpolation property.

**Monday, November 20, 2023**

**16:00 - 18:00 (THR)**

**The lecture will be held in Persian, in a combination of in-person and online.**

**Host:** *Amirkabir University of Technology - Department of Mathematics and Computer Science*

**Link:** <https://www.skyroom.online/ch/ialogic/ialogic>

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