

GAMES OVER FORMULAS IN LUKASIEWICZ LOGIC

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The goal of this contribution is to study a certain cooperative game [1] modelled by formulas in Lukasiewicz logic. We consider a finite set Φ of formulas in k propositional variables, a mapping $m : \Phi \rightarrow [0, 1]$, and truth valuations V over formulas in k propositional variables. The intended meaning is that a player is represented by a truth valuation V determining his degree of conformity $V(\varphi)$ with the statement given by a formula $\varphi \in \Phi$, while the number $m(\varphi)$ determines the total worth of “respecting” φ . Identifying each formula $\varphi \in \Phi$ with the corresponding k -variable McNaughton function f_φ , the functions f_φ can be naturally viewed as coalitions. A solution to this game is any distribution of worth among coalitions that no coalition can contest. Precisely, any state s [2] on the MV-algebra of k -variable McNaughton functions is a solution to the game, when $s(f_\varphi) \geq m(\varphi)$ for each $\varphi \in \Phi$. The set of all solutions is compact and convex. Its nonemptiness can be tested with the coherence criterion [3] for states on MV-algebras.

Acknowledgement. The work was supported by grant No. B100300502 of GA AV ČR and grant No. 1M0572 of MŠMT ČR.

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