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"Feasibility, logic and randomness in computational complexity"

Fact Sheet

Project Information

FEALORA

Grant agreement ID: 339691

Project closed

Start date

1 January 2014

End date

31 December 2018

Funded under

Specific programme: "Ideas" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost

€ 1 259 596,00

EU contribution

€ 1 259 596,00

Coordinated by

MATEMATICKY USTAV AV CR
V.V.I.

 Czechia

Objective

"We will study fundamental problems in complexity theory using means developed in logic, specifically, in the field of proof complexity. Since these problems seem extremely difficult and little progress has been achieved in solving them, we will prove results that will explain why they are so difficult and in which direction theory should be developed.

Our aim is to develop a system of conjectures based on the concepts of feasible incompleteness and pseudorandomness. Feasible incompleteness refers to conjectures about unprovability of statements concerning low complexity computations and about lengths of proofs of finite consistency statements. Essentially, they say that incompleteness in the finite domain behaves in a similar way as in the infinite. Several conjectures of this kind have been already stated. They have strong consequences concerning separation of complexity classes, but only a few special cases have been proved. We want to develop a unified system which will also include conjectures connecting feasible incompleteness with pseudorandomness. A major part of our work will concern proving special cases and relativized versions of these conjectures in order to provide evidence for their truth. We believe that the essence of the fundamental problems in complexity theory is logical, and thus developing theory in the way described above will eventually lead to their solution."

Programme(s)

[FP7-IDEAS-ERC - Specific programme: "Ideas" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities \(2007 to 2013\).](#)

Topic(s)

[ERC-AG-PE6 - ERC Advanced Grant - Computer science and informatics](#)

Call for proposal

ERC-2013-ADG

[See other projects for this call](#)

Funding Scheme

[ERC-AG - ERC Advanced Grant](#)

Host institution



MATEMATICKY USTAV AV CR V.V.I.

EU contribution

€ 1 259 596,00

Total cost

No data

Address

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115 67 Praha

 **Czechia** 

Region

Česko > Praha > Hlavní město Praha

Activity type

Other

Principal investigator

Pavel Pudlák (Prof.)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Beneficiaries (1)



MATEMATICKY USTAV AV CR V.V.I.

 **Czechia**

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Total cost

No data

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