

Colloquium d'Informatique de l'UPMC Sorbonne Universités

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Are formal methods the future of air traffic control? (Is there an autopilot on board?)



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22 Octobre 2013 - 18h00

Decentralized air traffic control is a concept of operations where air traffic control is decentralized to aircrafts and on board computers are used to assist and/or replace the pilots in deciding the route of the aircraft. In some experimental concepts, the full operation of the aircraft is delegated to on board computers. Such concepts can be accepted by the general population only if the computer systems used are extremely safe and this makes air traffic control a major domain of application for formal methods. The diversity problems in air traffic control leads to favor no particular type of formal methods but to use them all as different methods address different types of problems.

Gilles Dowek leads the Deducteam team at INRIA. His research covers formalization of mathematics (type theory, set theory, ...), proof processing systems (proof-checking, automated theorem proving, ...), design of quantum programming languages and safety of aerospace systems. He is also a writer in philosophy of sciences (winner of the 2007 Grand Prix de Philosophie de l'Académie Française) and popular science. He is also involved in teaching computer science to high school students.

