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Detection of Algorit Jan Spooren, KU Leuve Davy Preuveneers, KU Lieven Desmet, KU Lei Peter Janssen, , Belgiu Wouter Joosen, KU Lei	Leuven, Belgium uven, Belgium m	. 1916

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Spectre without Shared Memory  Ben Amos, Ben-Gurion University of the Negev, Israel Niv Gilboa, Ben-Gurion University of the Negev, Israel Arbel Levy, Ben-Gurion University of the Negev, Israel	. 1944
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