Albanese quotients of Picard modular surfaces, and rational points

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Abstract : This is a report on a work in progress in collaboration with Dinakar Ramakrishnan. A celebrated result of Mazur proves that modular curves of large enough level do not have rational points outside the cusps. Our aim is to establish a weak analogue for the Picard modular surfaces, which are Shimura varieties for a unitary group in three variables defined over an imaginary quadratic field. We prove that in many cases the Albanese variety has a quotient with a finite Mordell-Weil group and investigate consequences for the arithmetic of the Picard modular surface.