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Ashvin A Swaminathan* (aaswaminathan@college.harvard.edu), 388 Eliot Mail Center, 101 Dunster Street, Cambridge, MA 02138, **Aaron Landesman** (aaronlandesman@stanford.edu), 450 Serra Mall, Stanford, CA 94305, **James Tao** (jamestao@college.harvard.edu), 434 Winthrop Mail Center, 32 Mill Street, Cambridge, MA 02138, and **Yujie Xu** (yujie@caltech.edu), 1200 East California Boulevard, Pasadena, CA 91125. *Surjectivity of Galois Representations in Rational Families of Abelian Varieties.*

We show that for any family of abelian varieties over a rational base with big geometric monodromy, those members that have adelic Galois representation with image as large as possible form a density-1 subset. Our results can be applied to a number of interesting families of abelian varieties, such as rational families dominating the moduli of Jacobians of hyperelliptic curves, trigonal curves, or plane curves. As a consequence, we prove that for any dimension $g \geq 3$, there are infinitely many abelian varieties over \mathbb{Q} with adelic Galois representation having image equal to all of $\mathrm{GSp}_{2g}(\hat{\mathbb{Z}})$. (Received September 12, 2016)