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## On Colmez's product formula for periods of CM-abelian varieties

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Colmez conjectured a product formula for periods of abelian varieties with complex multiplication by a field K, analogous to the standard product formula in algebraic number theory. He proved this conjecture up to a rational power of 2 for K/Q abelian. In this paper, we complete the proof of Colmez for K/Q abelian by eliminating this power of 2. Our proof relies on analyzing the Galois action on the De Rham cohomology of Fermat curves in mixed characteristic (0, 2), which in turn relies on understanding the stable reduction of Z/2^n-covers of the projective line, branched at three points.

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