1052-55-44   **Ido Efrat** and **Sunil Kumar Chebolu*** (`schebol@ilstu.edu`), Department of Mathematics, Illinois State University, Campus box 4520, Normal, IL 61761, and **Jan Minac**. *On the continuous cohomology of Bloch-Kato profinite groups.*

For prime power $q = p^d$ and a field F containing a root of unity of order q we show that the Galois cohomology ring $H^*(G_F, \mathbb{Z}/q)$ is determined by a quotient $G_F^{[3]}$ of the absolute Galois group G_F related to its descending q-central sequence. Conversely, we show that $G_F^{[3]}$ is determined by the lower cohomology of G_F. This is used to give new examples of profinite groups which do not occur as absolute Galois groups of fields. These results are proved more generally for arbitrary profinite groups satisfying some conditions on their cohomology rings. This is joint work with Efrat and Minac. (Received August 06, 2009)

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