Combined ESR/U-Series chronology of Hominid-bearing layers at Galeria site, Atapuerca, Spain

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The Sierra de Atapuerca, Northern Spain, has yielded a conspicuous number of prehistoric and palaeontologic data documenting the Human history in Eurasia during the last million years. Three major sites, Gran Dolina, Galeria and la Sima del Elefante, found in the Trinchera area close to each other, document almost all of the entire period of the Pleistocene from the oldest Hominin of Western Europe dated to 1.1 to 1.3 Ma at Elefante (Carbonell et al., 2008) to 0.2 Ma on the top of the Galeria archaeological sequence. Recently, a chronology for Dolina and Galeria sites, based on luminescence data (TL and IRSL) applied on cave sediments, was published (Berger et al., 2008). The authors proposed for Galeria an age of 450 ka for the units lower GIII and GII suggesting that the human occupation is younger than the hominid remains of la Sima de los Huesos (>530 ka) close to 1km distance (Bischoff et al., 2007).
In this paper, we present new results obtained by combined ESR/U-series method on herbivorous teeth sampled in different levels of Galeria site. They are in agreement with TL ones for the upper part of Galeria (GIV and GIIIb) around 200-250 ka. From GIIIa to GIIa levels, the TL ages change abruptly getting older of 200 ka while ESR ages stay relatively constant when depth increases. Our results suggest a different interpretation in terms of chronology between GII, GIII and GIV units of Galeria and the upper part of Dolina (TD10 and TD11).