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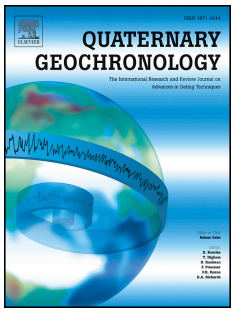

A post-Jaramillo age for the artefact-bearing layer TD4 (Gran Dolina, Atapuerca): New paleomagnetic evidence

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ABSTRACT

The cave - site of Gran Dolina in Atapuerca preserves one of the most abundant records of Early to Middle Pleistocene sediments known so far. Therefore, establishing the chronology for the stratigraphic levels within the cavity is crucial. Since the early 1990s, subsequent excavations have allowed better access to the older stratigraphic levels TD4, TD5 and TD6 allowing for re-sampling with the aim of providing detailed chronology and testing whether the lithic industries-bearing layer TD4 has a post or pre-Jaramillo age, and hence establishing a better geochronological context for the lithic tools. In this study, we obtained negative magnetic polarity directions for these stratigraphic levels, a result consistent with previous studies that already identified the Matuyama—Brunhes boundary between TD7 and TD8 levels. In addition, several new ESR analysis, recently published, were carried out throughout the sequence, provide an age between 0.77 and 0.85 Ma for the upper limit of TD6 and an age of 0.91 ± 0.25 Ma for the lower limit of TD4. The age provided by ESR for TD6 is consistent with recent luminescence analysis, which provides a mean age of 846 ± 57 ka. The combination of ESR, luminescence, biostratigraphy, with our new paleomagnetic results, supports a post-Jaramillo age for layer TD4 in Gran Dolina.

Keywords: Atapuerca, Gran Dolina, lithic tools, Jaramillo, Early Pleistocene, biostratigraphy.