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Rotational normal modes of triaxial two-layered anelastic Earth model

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This study focuses on providing rotational normal modes of a triaxial two-layered anelastic Earth model with considering the electromagnetic coupling. We formulate the rotation equation of the triaxial two-layered anelastic Earth model and then provide solution of that equation. We obtain four mathematically possible solutions which might exist in reality. Based on present choice of the conventional reference systems, only two of these four solutions correspond to the real existing prograde Chandler wobble (CW) and the retrograde free core nutation (FCN). We provide the periods of CW and FCN as well as their quality factors based on various experiments and observations. This study is supported by National 973 Project China (grant No. 2013CB733305) and NSFC (grant Nos. 41174011, 41210006, 41429401).