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Interactive comment on "What can seismic noise tell us about the Alpine reactivation of the Iberian Massif? An example in the Iberian Central System" *by* Juvenal Andrés et al.

Anonymous Referee #1

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This manuscript describes a model for the crustal (nor really lithospheric) structure of the Iberian Central Range on the basis of seismic noise analysis. The main result of the study is the resolution of the structure of the crustal root of this intraplate mountain belt as featuring a thrust fault offsetting the lower crust and Moho discontinuity. The paper is in general fairly written, although I found some points of concern. 1) In the introduction, although there is a lengthy description of the Variscan geology of Iberia, largely irrelevant for the purpose of the ms., little reference is given to the Alpine setting of the Iberian plate interior, in which the study is also framed. 2) The conclusion of the lower crust imbrication was seemingly already reached by Andres et al (2019) in an earlier work, and hence the novel contributions of the ms. appear undermined. 3)

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in Fig. 4, the authors should explain how they interpreted the picked reflections, and their uncertainties, e.g. why the crust-mantle boundary is D instead of C (and like that, the attribution of other reflectors). Why granites should be so reflective in the profile? 4) I failed to understand the interpretation of the structure of the upper crust. Clarify the distinction between the ICS granitoids and the ICS granitoids and metasediments, and their boundaries. The caption of Fig. 5 should be rewritten, avoiding qualitative color description and conforming to the actual legend of the figure (e.g. what is melted crust in a present-day section?). The relation of these bodies with “pop-up” structuring is confusing. A “staircase configuration describing smooth underthrusting” sounds contradictory. Where is the mid-crustal detachment shown, and what does it mean “assimilated by granitoids”. Can the authors explain better the sentence : if the detachment has been assimilated, upper crustal fractures can find their way into the lower crust thus allowing the upper crust to sink”. Detailed comments: l. 90: spell granites l. 250: spell located l. 320: meaning of “photoliths”? l. 420: “Other possibilities exist and cannot be ruled out”: Which are these?

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