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Interactive comment on "Multipoint Observations of Compressional Pc5 Pulsations in the Dayside Magnetosphere and Corresponding Particle Signatures" *by* Galina Korotova et al.

Anonymous Referee #1

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I have read the manuscript angeo-2020-32 with title "Multipoint Observations of Compressional Pc5 Pulsations in the Dayside Magnetosphere and Corresponding Particle Signatures". I believe that the observational evidence for the generation of Pc5 pulsations due to mirror instability are quite important yet I'm left with the feeling that the importance of the authors' conclusions are somehow lost into many unnecessary details reported. Moreover, the authors have included 16 figures in the manuscript yet some of them (or some panels at least) are not discussed at all or even they do not play an important role in the conclusions. You can find my comments below.

Lines 103-114: Please merge this chapter with introduction.

Lines 136-138: If it is not that important (I guess it is not since it is not shown) it shouldn't be mentioned at all.

Line 152: Define cone angle. Also I don't see it anywhere in the figure. Instead I see the three components of speed which are not discussed at all. Figures are already too many (16!!!). Since Kp and speed are not discussed at all remove them and merge figures 1 and 2 (or even better provide the total solar wind speed only).

Lines 170-178: The authors discuss the time-lag between solar wind pressure and compressions at GEO. Is this really important for the conclusions of this work? Moreover, I'm left with the feeling that the use of GOES measurements, in general, do not provide any significant observational evidence in this work. If I'm wrong then I believe that it should be discussed more clearly but if I'm not the authors should consider not using it at all.

Lines 187-189: The authors state "Prior to the arrival of the strong solar wind dynamic pressure variations, RBSP-A observed very weak compressional pulsations with Pc5 periods and amplitudes of 1-3 nT from 18:15 to 18:55 UT." This is not shown anywhere.

In figures 5 and 6 the authors show the magnetic field in GSM coordinates along with the total magnetic field yet they are referring to compressional pulsations. If the authors mean the Btot they should mention it along with the assumption that Btot is almost the same with Bcomp. Nevertheless, since they are showing the MFA coordinates later in the text, I don't understand the usage of these two figures especially when they also contain the x,y,z coordinates which are not discussed at all.

Lines 208-211: Please rename X-Y-Z to Poloidal-Toroidal-Compressional.

lines 271-274: The oscillations are of course visible but the rest of the statements are not supported by this plot as the reader can understand nor the exact frequency of these waves neither the phase difference. Maybe a simple filtering would give prominence to these pulsations or even better a spectral analysis.

Line 279: What is P and B? Please define.

Figure 13: There is a completely different behavior between low and high energy PA distributions yet the authors do not discuss it at all. I think there is much more information in this figure which should be further discussed.

Line 289: Please rephrase.

Lines 310-311: I don't understand this sentence. What do the authors mean by "most prominent". In figure 9, the double frequency is very pronounced from $\sim$19:54 until after 20:32.

Lines 350-353: I would like to see the filtered time series of pressure or its fourier transform. As Kepko et al., 2002 have shown, the time interval that the authors examine is the ideal one for pulsations originating in the solar wind pressure.

Line 369: Please rephrase.

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