Report: angeo-2019-7

It seems that the authors do not understand that simple description of the observations is not new physics yet. I give up on that. It is possible that others will be able to use the data to arrive at new physics. Yet, even primary data analysis should be done carefully and not as it is now.

Provide the full list of high-beta shocks as a supplement material.

Event 1:

- "shock velocity is definitely much higher than the spacecraft velocity" - relative to what ?

- "Fig. 6 contains overview of magnetic field and plasma parameters." - does not seem that quiet downstream is reached.

- Table S1: X,Y,Z are not relevant to the analysis. The following parameters which ARE relevant are absent: Alfven speed, shock speed relative to the upstream plasma, Bd/Bu, nd/nu, thermal speed (replace T), ion inertial length, ion thermal gyroradius, ion convective gyroradius.

- "The coplanarity calculation for the shock normal" - provide information about the region used for coplanarity.

- Provide estimates of errors of theta and Mach number determination

-"The final value of downstream magnetic field is around 10 nT" - where is this "final downstream" ?

-"first signs of gyrating ions upstream" - reflected-gyrating ions can be observed at distances of the order of the ion convective gyroradius upstream of the ramp (see below), gyrophase bunched beams propagate toward upstream. What gyrating ions are mentioned in the paper ? Bale et al, PRL 91, 265004, 2003, doi:10.1103/PhysRevLett.91.265004 show that the density transition width is of the order of the ion convective gyroradius. Why special is found for this shock ?

- "The increase in magnetic field magnitude (aka shock ramp in a quasi-perpendicular case) is smeared" - magnetic ramp is defined as the region of the largest magnetic increase. It is between 14:37:48-14:37:49 in Figure 7 and not "smeared". The mentioned half a minute is the precursor region including foot and shock generated magnetic fluctuations. See Scudder et al, 1986.

- "Shock velocity along the normal is 8.3 km/s outbound" - how this is calculated ?

- "This calculation is not very reliable" - yet it is used for estimates of spatial scales. What are the errors ?

-"Despite the described smeared magnetic field increase, the full shock transition is rather compact and coherent and thus it is distinctly different from what expected for quasi-parallel shock with multiple shocklets" - provide quantitative description: what is "smeared", what is "compact" and "coherent" ? It seems that this sentence contradicts earlier statements.

- The frequency spectra in Figure 8 seem to be self-similar power-law spectra with a low frequency cutoff. This is typical for a broad-band Fourier transform of the large-amplitude magnetic fluctuations. The "dominant frequency" is just the inverse of the peak-to-peak time (about 2 s visually).

- "polarization actually might be linear with the variable eigenvector" - what is this ? Please split the region of calculation to sub-regions to support the statement.

- "We also estimate the span of principally possible wavelengths." - should be directly compared to physically meaningful spatial scales.

Event 2: same comments as above. Additional comments:

- "where two waveforms in By component (Fig. 10b) are kind of similar and shifted by a fraction of period." - they do not look similar at all. Actually, measurements of the two spacecraft look quite different. If you still think they can be considered as similar but shifted please show these two profiles overplotted when properly shifted.

- "shows absence of any stable polarization, which can be in- terpreted as sometimes linear, sometimes circular" - usually identification of polarization is done using several wavelength. What is "sometimes" ?

Event 3: same comments as above. In addition, the magnetic field looks quite different from the previous two shocks and now clear asymptotic downstream is seen. What are the errors in determination of theta ? Can this shock be a quasi-parallel and/or strongly nonstationary ?

Conclusions: "shock structure should become independent from magnetic field direction" - how did you arrive at this conclusion ?

The above comments are also addressed to Discussion and Conclusions where many of the earlier statements are simply reiterated. The paper also claims that "overall layout is quite characteristic and distinctly different from that for supercritical quasi-perpendicular shocks." It is not explained what is "characteristic" (see e.g. Scudder et al, 1986 as an example of how a "typical" shock should be described). "Distinct difference" does not seem to be supported by observations.

English is poor, please edit.