Reviewer #1 Evaluations:  
Science Category (Required): Science Category 2  
Presentation Category (Required): Presentation Category B  
Key Points (Required): Yes  
  
Reviewer #1 (Comments to Author (shown to authors):  
  
This is a review for the manuscript Shumko et al., submitted to GRL. This paper describes dual FIREBIRD cubesat observations of a single, bouncing microburst. The dual observations allow for a direct determination of the scale size and other properties of the microburst. Microbursts likely represent an important source of radiation belt electron loss during storm recovery phase, and this is an important result that can be used to (among other things) compare to the size of chorus wave packets which are likely responsible for the scattering that creates the microburst. It's also a great example of the utility of the kinds of useful measurements that can be made from small-scale and budget missions.   
  
Overall I find that this paper may be suitable for publication after some of my concerns are addressed.

*Thank you for your critique and feedback regarding this manuscript. We have made your recommended changes, and our responses are in blue italicized text. As before, we replied with “done” for simple fixes.*  
  
My only real issue occurs around L201: I find this measure of the longitude to be a bit at odds with how I naively think of uB extent, which is the physical extent of the region of precipitating electrons upon their first encounter with the atmosphere (or as measured at LEO). This extent is what's related to the physical extent of the source of the microburst (probably chorus). Seems you're calculating longitudinal extent based on all the observed bounces. In a way this makes sense since this is the extent over which each uB will cause precipitation loss (since a certain fraction of e- precipitate on each bounce). However, it's at odds with how most people will think of the uB extent. I think it would be good to clarify why you're defining the extent the way you do. Also, is this the reason why you're finding the uB to be the largest observed on FIREBIRD?

*Thank you for pointing this out, we have clarified our assumption that all of the electrons in the decaying peaks in the HiRes data were from the initial microburst. Then, our assumption leads into our derivation of the longitudinal scale size.*  
  
  
L62-64: Some rewriting needed here. *This sentence seemed to be out of place, so we moved it into the next paragraph, and improved the language. Check with co-authors.*

L92: "were placed 632" *Done*

L94: Change "of events" to "of microbursts" *Done*

L94-95: Remove "that are either spatial or temporal". It's redundant with "resolve the space-time ambiguity" *Done*

L101: These are sampling periods, not rates. *Done*

L106: Careful with wording: the "mirror again" part doesn't produce a train. What you're trying to say is that subsequent mirrorings produce a train of decaying peaks. *We have clarified this sentence. Thank you for pointing out this issue.*

L109: Confused about "HiRes". Does this refer to both the 18.75ms and the 12.5ms modes? Should you mention that these are called HiRes in L101? *Done. We first introduce the HiRes data at the end of the first paragraph in section 2.*

L128-129: Probably want to rewrite this since the first sentence is not true for all e-....just those in the DLC. *Check with co-authors if this should satisfy the reviewer.*

L157: This should be discussed more since it's a fairly involved figure. You don't have to go into as much detail as in the figure caption, but should probably mention that the different lines are different models, etc. Another option is to say in the first sentence of this paragraph: "...derived from four magnetic field models, the results of which are shown in Fig. 2." *We incorporated your suggestion in the first sentence, but we not made any further changes in the text since the following paragraphs do describe Fig. 2 in great detail.*

L163: a bit confusing. I think some readers won't know what you mean here. *Thank you for pointing this out, we have clarified that the broad energy range of FIREBIRD’s channels would make a dispersion signature harder to identify.*

L180-181: This spectra is similar to spectra show by Lee et al. [2005] from STSAT-1 and Datta et al. [1997] from sounding rocket measurements. *Done*

L185: Maybe try: "after applying time and position corrections detailed in the SI…" *Done*

L207: I understand what you're saying in this paragraph, which is:  
-Longitude extent determined by highest energy bin, which contains the electrons that drift the fastest  
-FU3 sees largest long size. Its largest energy bin extends from 555 to 771 keV.  
-The min and max long sizes from these two energies are 39 +/- 1 and 51 +/- 1 km.  
However, I found it quite confusing to read the first time through.

*We have clarified this paragraph to justify why we use FU3 to calculate the longitudinal scale size, and we improved the grammar regarding the scale size differences from the lower and upper edges of the fourth energy channel. Check with co-authors*

L211: Since you're not actually comparing to the chorus packet size in this paragraph, I'd remove the sentence starting on L211. Otherwise, readers will wonder if this paragraph got cut off too early b/c this isn't further mentioned in this section. *We added a transition sentence that wraps up the paragraph, and refers to the more detailed discussion in the discussion section.*

L226: Is this true? If you calculated the longitudinal scale size using the lowest energy channel rather than the highest, I think the size would be much smaller based on the technique you've used. *Thank you for pointing this out. The longitudinal scale size is strongly dependent on energy. We changed the sentence to say that the latitudinal scale size does not appear to be dependent on energy.*

L250-253: This may read better if you discuss the "midnight" part by changing the last sentence to: "...in future studies, except perhaps near midnight where the magnetosphere is more stretched and difficult to model." *We clarified the sentence to point out that this method can be used to validate and improve magnetic field models near midnight.*

L273: red dotted *Done*

L274: blue dot-dash curve *Done*