



Local Time Distributions of Subelements of Lower-Band Rising-Tone Chorus Emissions

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Whistler-mode chorus emissions are electromagnetic waves generated in the equatorial region of the inner magnetosphere. One of the striking features of the chorus emissions is discrete and coherent elements. Each individual element consists of many subelements. Shue et al. [2019] reported that distributions of the lasting time of lower-band rising-tone chorus elements have a local-time dependence. However, local time distributions on their subelements have not been studied before. In this study, we identified all chorus subelements using a list of lower-band rising-tone chorus elements compiled from data of the THEMIS probes. With an application of statistical F-test to the data, we find no local-time dependence on distributions of the lasting time of the subelements. Comparisons between local time distributions of chorus subelements and elements can help us better understand physical processes underlying chorus generation, providing some constraints for chorus theorists or modelers to follow.

References

- [1] Shue, J.-H., Nariyuki, Y., Katoh, Y., Saito, S., Kasahara, Y., Hsieh, Y.-K., et al. (2019). A systematic study in characteristics of lower band rising-tone chorus elements. *Journal of Geophysical Research: Space Physics*, 124, <https://doi.org/10.1029/2019JA027368>