

ELECTRON SCATTERING BY ELECTROSTATIC ELECTRON CYCLOTRON HARMONIC WAVES DURING STORM-TIME

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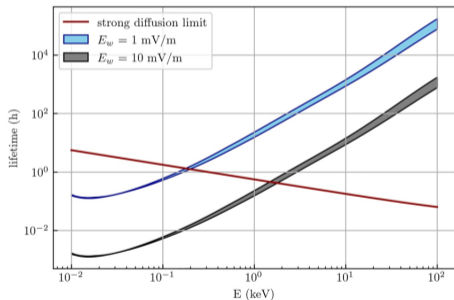
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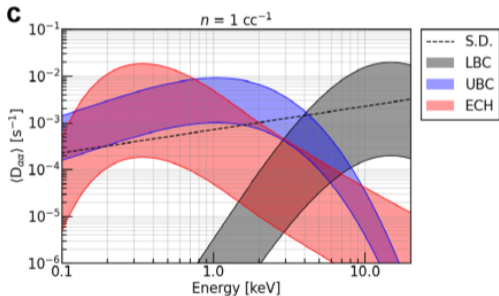


Motivation

- Haas et al. (2023): missing loss process in the electron ring current
- Are ECH waves responsible for (part of) the missing loss?



Stoll et al. (2023)

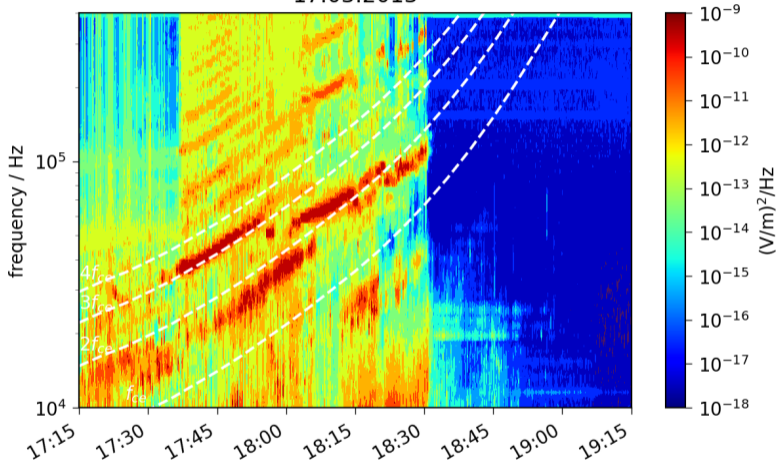


Fukizawa et al. (2022)

Electrostatic electron cyclotron harmonic waves

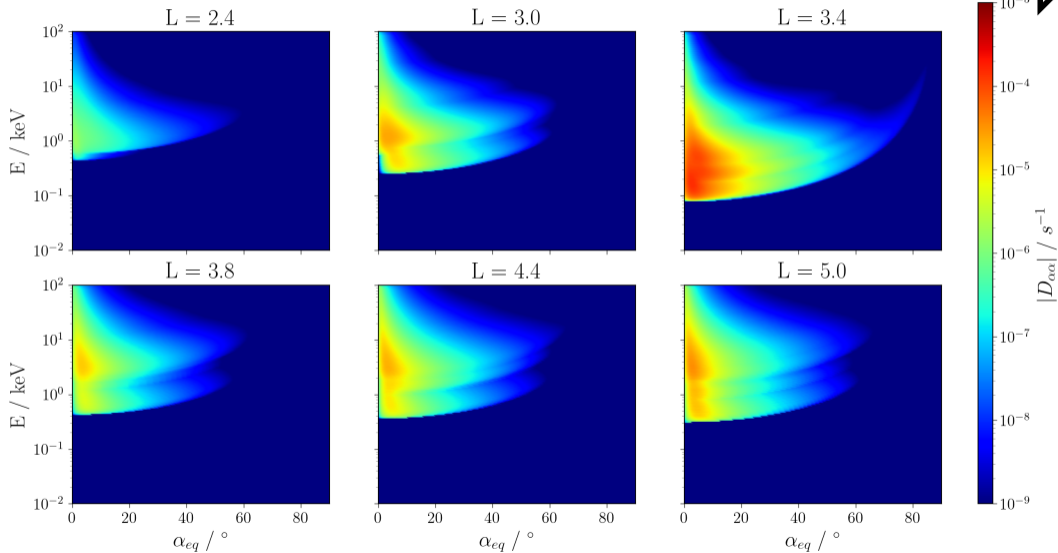


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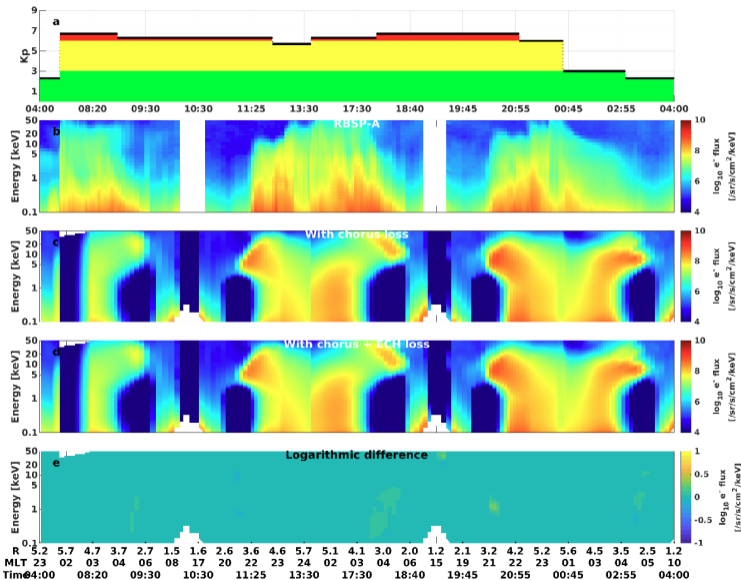


L	4.9	4.3	3.4	2.9	2.4	1.5	1.2
MLT	2.8	3.2	4.0	4.6	5.4	8.2	13.7
λ	-2.6	-1.5	0.4	2.0	4.2	9.9	7.2

ECH wave-induced diffusion coefficients



VERB-4D Simulations

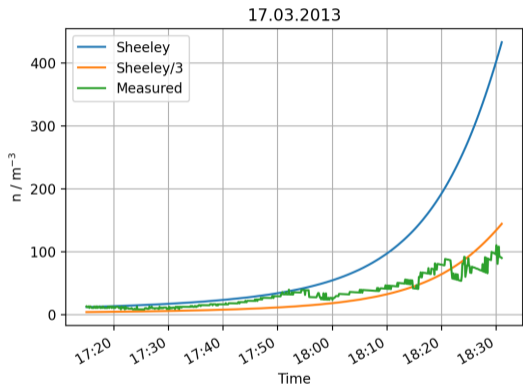
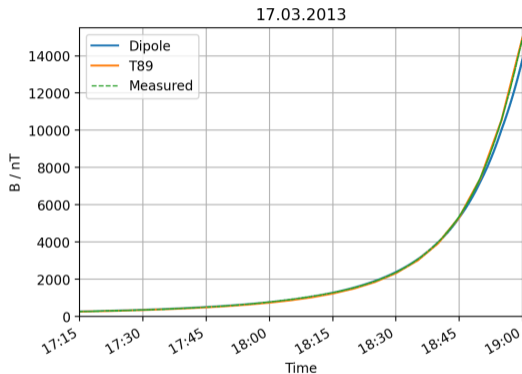




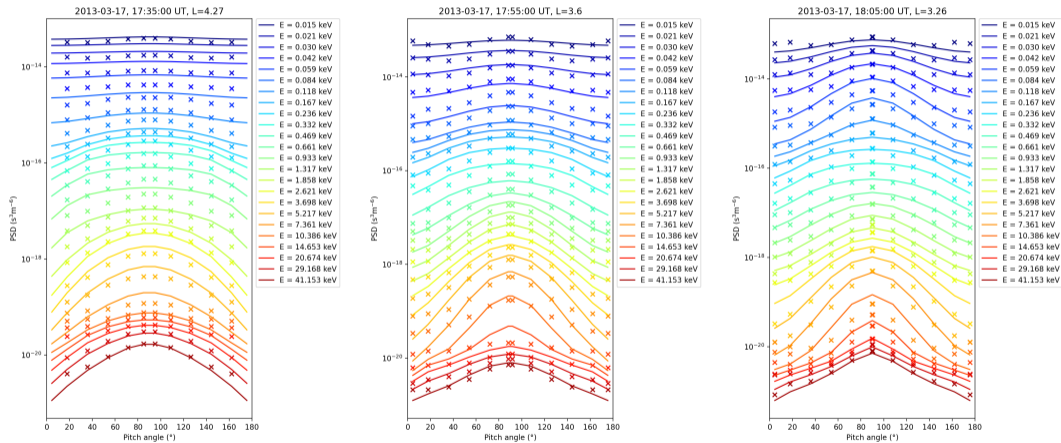
The diagram illustrates the Earth's magnetic field and a satellite in orbit. The Earth is shown as a blue and white sphere in the center, with white lines representing the magnetic field lines that loop around it. A satellite is depicted in orbit around the Earth, with a white body and solar panels. The background is a dark blue space with a large orange and red celestial body on the left. A dark blue horizontal bar is at the bottom of the slide.

BACKUP SLIDES

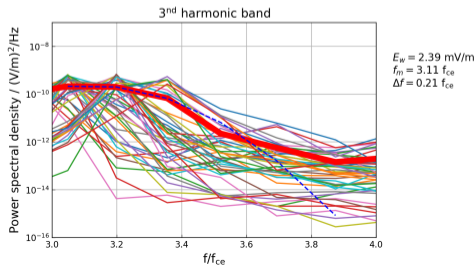
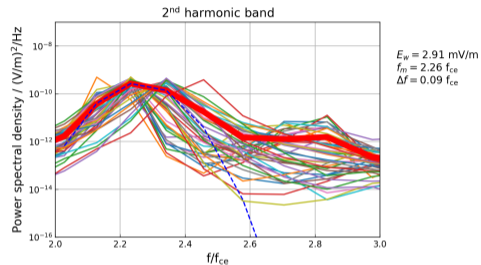
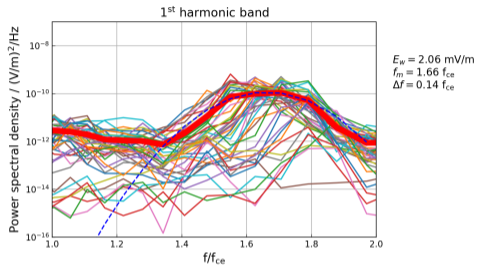
Magnetic field and plasma density



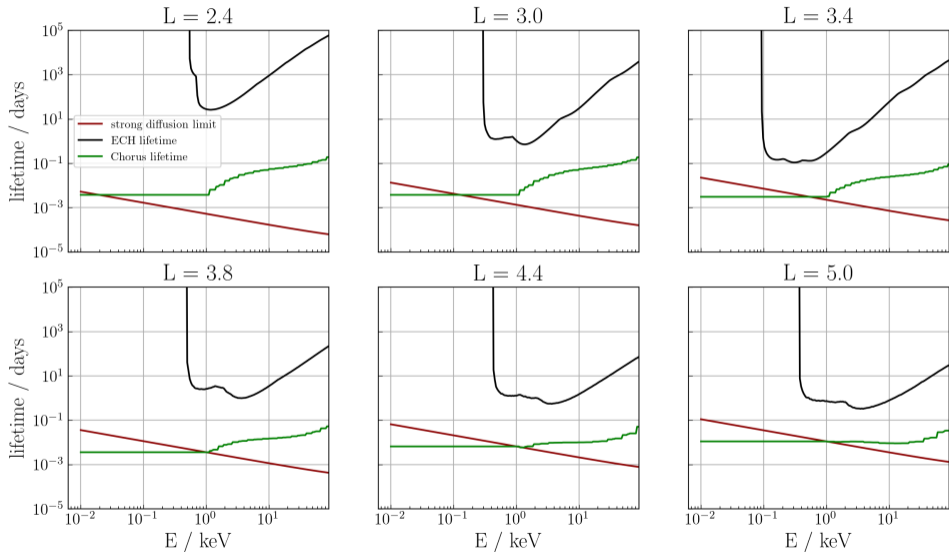
Fits to phase space density

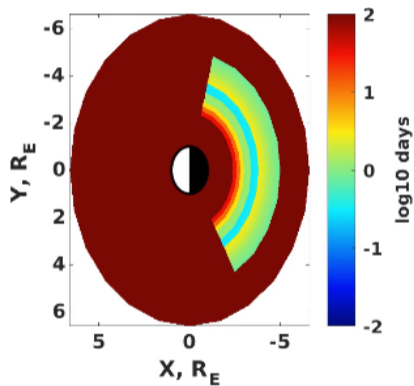


Wave amplitude

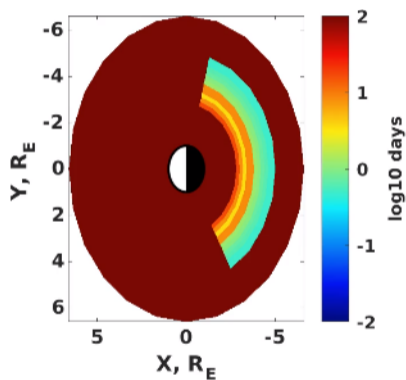


Lifetimes





(a) ECH lifetimes at $E = 1 \text{ keV}$, $\alpha = 50^\circ$



(b) ECH lifetimes at $E = 5 \text{ keV}$, $\alpha = 50^\circ$