

EGU22-8067, updated on 11 Aug 2022

<https://doi.org/10.5194/egusphere-egu22-8067>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Observations of Energetic Electron Substorm Injection Signatures by Cluster and BepiColumbo During an Earth Flyby

Manuel Grande¹, Beatriz Sanches-Cano², Rumi Nakamura³, Rami Vainio⁴, Yoshizumi Miyoshi⁵, Iannis Dandouras⁶, Rosie Johnson¹, Philipp Oleynik⁴, Satoko Nakamura⁵, Chris Perry⁷, Patrick Johnson⁸, Juhani Huovelin⁹, Sophie Maguire¹, and Daniel Heyner¹⁰

¹Aberystwyth University, Institute of Mathematical and Physical Sciences, Physics, Aberystwyth, Ceredigion, United Kingdom of Great Britain – England, Scotland, Wales (mng@aber.ac.uk)

²Leicester University, UK

³OEAW Graz, Austria

⁴Turku University, Finland

⁵Nagoya University, Japan

⁶IRAP Toulouse, France

⁷Rutherford Laboratory, UK

⁸Max Plank Inst for Solar System Physics, Gottingen, Germany

⁹Helsinki University, Finland

¹⁰Technische Universität Braunschweig, Germany

Observations of Energetic Electron Substorm Injection Signatures by Cluster and BepiColumbo During an Earth Flyby

We present an analysis of the energetic electron signatures observed by BepiColumbo and Cluster during the Bepi flyby of Earth on 10 April 2020, as well as other spacecraft. After closest approach, the SIXS instrument on Bepi observed two separate substorm injection fronts, while Cluster RAPID/IES also observed a sequence of energetic electron signatures. Bepi and Cluster were in a particularly favourable configuration during this event, with Bepi moving rapidly radially outward near the nightside equatorial plane while the four Cluster spacecraft cut the same region in a north/south direction in a string of pearls configuration. The coincidence of this favourable geometry with the substorm activity is highly fortuitous and appears to show a complicated sequence of spatially and temporally separated injections and drift echoes.