



Lateral streamer emergence from space stem precursor

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Sprites are Transient Luminous Events (TLEs) consisting of hundreds of streamer discharges. After the passage of a streamer head, some persistent structures develop in the ionized channel left behind. Observations show lateral streamers emerging from these structures known as beads and glows. Long laboratory discharges also show analogue burst of lateral streamers from glows.

In our simulations we have observed the emergence of glow-like structures or space stem precursors. These regions inside the streamer wake and ahead of a negative leader have a low conductivity and an electric field higher than the surrounding channel.

Glows and beads are the origin of lateral streamers. These lateral streamers influence the dynamics of the corona by interacting with other streamers, reconnecting to the electrode or the leader and possibly influencing the conductivity of others channels noticeably. Therefore, it is crucial to elucidate the lifespan of these space stems as well as the conditions under which the lateral streamers launch from these regions.