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Sprite discharges on earth and other planets: experiments and theory

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It is by now well understood that large sprite discharges at the low air densities of the mesosphere are physically similar to small streamer discharges in air at standard temperature and pressure. I will briefly discuss the underlying Townsend similarity laws and their range of validity as well as their experimental verification. The similarity laws open the way to investigate sprites on earth and on other planets in the lab. I will review relevant recent experimental and theoretical results.

Keywords: sprite discharges, transient luminous events, streamer discharges