



## Generation of chiral plasma plumes in discharge devices

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Chiral Streamers have been characterized as a new type of plasma discharge with the helical propagation pattern driven by a pulsed DC power supply without any imposed external magnetic field. Further, high speed time resolved optical imaging have shown the transition into helical discharge from the conventional straight line ionization wave propagation. Specifically, it is observed that these helical (chiral) plasma plumes are composed of plasma bullets propagating along the helical path. In context with it, analytical and simulation model have been presented for the generation and propagation of chiral plasma plumes in a three- dimensional electromagnetic field configuration in a cylindrical geometry. The model reveals the signatures of electromagnetic modes with the poloidal electric field. Further, the relation between chiral orientation and discharge parameters suggests that it is sensitive to the choice of initial and final boundary conditions of the

discharge apart from pulse frequency or pulse width.

### References

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