



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 3634

Type: **Invited Speaker** / Conférencier(ère) invité(e)

(I) The impact of ionospheric plasma turbulence on communication, position, navigation, and timing systems

Tuesday 20 June 2023 15:15 (30 minutes)

The ionosphere, an ionized part of the Earth's atmosphere, affects radio waves passing through it. The ionosphere and structures in them can cause disruptions in communication, position, navigation, and timing (CPNT) systems that rely on radio signals. These effects are scale dependent and driven by plasma turbulence (irregularities) in the ionosphere. The impact of ionospheric plasma turbulence on CPNT systems is significant and ranges from correctable/manageable errors to catastrophic failure of CPNT systems. For most applications, these effects can be broadly categorized into deterministic and stochastic. This talk will outline the impact of plasma turbulence on CPNT systems and methods to mitigate some of these detrimental effects on these critical systems. The talk will also discuss the use of these impacted signals in fundamental research on plasma turbulence and ionospheric irregularities.

Keyword-1

Plasma turbulence

Keyword-2

Ionosphere

Keyword-3

CPNT systems

Author: Prof. THAYYIL, Jayachandran (University of New Brunswick)

Presenter: Prof. THAYYIL, Jayachandran (University of New Brunswick)

Session Classification: (DPP) T4-2 Plasma Physics Symposium VI | Symposium de physique des plasmas VI (DPP)

Track Classification: Symposia Day (Tues. June 20) / Journée de symposiums (mardi, le 20 juin): Symposia Day (DPP - DPP) - Plasma Physics | Physique des plasmas