ABSTRACT

The radially expanding solar wind plasma is the integral part of research for many space-crafts observations. The behavior of the slow solar wind ($v_{sw} < 600\ kms^{-1}$) can also be studied by the electron. In this radially expanding solar wind plasma there is a variety of different instability which is responsible for synchronize the temperature anisotropies in solar wind electron. The present study consider these three electron components core, halo, and *strahl* to study their model analysis and populations properties. The excessive perpendicular electron temperature condition $T_{\perp}>T_{\parallel}$ along the uniform magnetic field drive the EMEC instability. We study the dynamic behavior of these unstable modes and catch the time evolution of these modes. We have employed the quasilinear analysis and ignore the non-thermal effects and all kinds of drifts. We developed a set of consistent quasilinear kinetic equations comprised of the instantaneous dispersion relations, dynamical temperature equation and wave-energy density. For the choice different combinations of the plasma anisotropy, $T_{\perp}/T_{\parallel}$, and the betas, $\beta_{\parallel}$ and $\beta_{\perp}$, we have sketched the linear real frequency and growth rate. On Moving towards the quasi-linear analysis, we have also show the time-variation in the core, halo and *strahl* electrons then resulting wave-energy density for the choice of initial conditions. For perpendicular instability threshold condition we constructed the curve in phase space ($\beta_{\parallel e}, T_{\perp e}/T_{\parallel e}$) to study the dynamical route of these electron components. Further incorporating the non-thermal effects, our study can be one of the very important effective tool in the global kinetic solar wind model