Interaksi neutrino dengan elektron di atmosfir supernova = Neutrino interaction with electron in Supernova atmosphere

Listiana Satiawati, author

Abstrak

Telah dihitung polarisasi, penampang lintang diferensial dan jalan bebas rata-rata pada interaksi neutrino-gas elektron dengan mempertimbangkan faktor bentuk elektromagnetik neutrino, untuk temperahu' berhingga. Faktor- faktor yang dipertimbangkan pada perhitungan adalah retardasi, detail balans dan Pauli bloking serta anti partikel.

Efek banyak benda masuk dalam perhitungan polarisasi melalui pendekatan korelasi fase random (random phase approximation) dan massa foton efktif. Hasil yang didapat digunakan untuk mempelajari interaksi neutrino dengan materi pada atmosfir Supernova.

Hasil penelitian ini menunjukkan seberapa besar pengaruh faktor-faktor temperatur, kerapatan elektron, momen dipol neutrino, jari-jari muatan neutrino, korelasi random phase approximation, massa foton efektif dan koreksi relativitas umum pada jalan bebas rata-rata neutrino pada atmosfir supernova.

.....The polarizations, differential cross section and mean free path of neutrino-electron gas interaction have been calculated by taking into account the neutrino electromagnetic form factor, for finite temperature. 'The retarded, detailed balance, Pauli blocking and anti-particle factors have been also taken into account in the calculations.

Many~body effects enter into polarizations calculations through random phase approximation correlation and photon effective mass. The results are used to study the interaction of neutrino with matter in supernova atmosphere.

It has also shown how large the influence of temperature, electron density, neutrino moment dipole, neutrino charge radius, random phase approximation correlation, photon effective mass and general relativity correction in mean free path at supernova atmosphere.