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| |  | | --- | |  | |  | | **Special Abbreviations:**   |  |  | | --- | --- | | G | Newton’s gravitational constant | | a | Cosmic scale factor | | H | Hubble parameter | | H0 | Hubble constant | | z | Cosmological redshift | | Λ | Cosmological constant or vacuum energy | | w | Equation of state parameter | | ρcr | Critical energy density of the Universe | | ΩM | Fractional energy density of baryonic and dark matter | | Ωr | Fractional energy density of radiation | | ΩΛ | Fractional energy density of the cosmological constant | | Ωk | Fractional energy density due to spatial curvature | | L | Lagrangian density | | LM | Lagrangian density of physical matter | | G | Gauss-Bonnet invariant | | ∗RR | Chern-Pontryagin density | | R | Generic curvature invariant beyond the Ricci scalar | | ✷ | Covariant d’Alembertian | | T(MG)μν | Modified-gravity effects in stress-energy-momentum tensor | | Υ | Astrophysical areal radius | | mPl | Planck mass | | m ̄ Pl | Reduced Planck mass | | Q | Mass gap between neutrons and protons | | g∗ | Number of statistical degree of freedom for relativistic species | | Xn | Fractional abundance of free neutrons | | Yp | Primordial mass fraction of 4He | | yD | Primordial abundance of deuteron | | yLi | Primordial abundance of 7Li | | s | Entropy density of the Universe | | mν | Summed mass for the three generations of neutrinos | |  |  | |  |  |   **Special Characters:** | | |  |  | | --- | --- | | a | Lattice spacing | | β | SU(Nc) coupling constant; beta function | | χ | Topological susceptibility; Polyakov loop susceptibility | | c | Speed of light | | cx | cos(x) | | g | SU(Nc) bare coupling | | h~ | Planck’s constant | | kB | Boltzmann’s constant | | log | Natural logarithm | | N | Natural numbers | | Nc | Number of colors | | Nf | Number of fermion flavors | | Ns | Lattice extension in a spatial dimension | | Nτ | Lattice extension in Euclidean time dimension; temperature direction | | q | Gaussian or Student difference test; goodness-of-fit | | σ | String tension | | σi | A Pauli matrix | | SU | (Nc) Special unitary group of degree Nc | | sx | sin(x) | | Tc | Deconfining phase transition temperature | | τint | Integrated autocorrelation time | | Z | Integers | |  |  |   **Special Symbols :**  ϕq v J .vv01 Linear absorption coefficient wave number integrated over one line (SI units: m—2) | | ϕq v0 J 0v J .vv0 Wave number integrated band absorption | | ϕq .0 v0  Absorption coefficient wave number integrated over a single molecular line. | | ϕq . Dirac velocity matrix operator | | ϕq .Q Mean absorptivity wave number-integrated over a single line | | ϕq ˇ Dirac matrix operator | | ϕq ˇi Initial electron velocity divided by speed of light | | ϕq ˇn Spectroscopic constant | | T Inelastic collision broadening half-maximum half-width (HMHW) | | TC Ion–ion Coulomb interaction parameter | | ˇQ Lorentz contraction factor | | Ψ0ˇi Activity coefficient of species i | | Ψ0.n/ I Natural radiative half-maximum half-width | | Ψ0ˇs Ratio of the averaged squares of off-diagonal to diagonal components of scattering tensor | | Ψ0ˇ.n/ Half-maximum half-width (HMHW) for medium with refractive index n | |  | | |  |  |  | | --- | --- | --- | | Ani | Quantum defect |  | | ıl | Phase shift for l-wave function |  | | ϕqo | Permittivity of vacuum |  | | ϕq | Kinetic energy of free electron |  | | ϕq dj | Energy of formation of molecule j in an |  | |  | infinitely diluted gas |  | | Ψk.p T/ | Emissivity at frequency Ψ0 , density p, and  temperature T .See also . |  | | Ψk .p T/ | Total emissivity |  | | | Ψke Complex permittivity of medium | | Ψk0e Real part of permittivity of medium | | Ψk 0e0 Imaginary part of permittivity of medium | | ΨkLJ Depth of Lennard–Jones intermolecular potential | | Ψk e Emission coefficient per unit volume at frequency Ψ0 | | Qe.−D.=.kT/ Electron degeneracy parameter for continuum lowering | | Qe.i Normal coordinate | | Qe.α Emission efficiency at frequency Ψ0 see also .p T/ | | ı Angle between incident and scattered radiation Polar angle | | ne Electron opacity | | n Mass extinction coefficient at frequency Ψ0 | | nP Planck mean opacity | | nR Rosseland mean opacity | | nP.Au/ Planck group mean opacity | | nt Total (radiative and electron) Rosseland opacity | | nR.Au/ Rosseland group mean opacity | | nT .Au/ Transmission group mean opacity | | 2e Thermal conductivity by electrons | | s Electron–ion scattering mean free path | | 2L Lorentz gas thermal conductivity | | 2 Mean free path for extinction at frequency Ψ0 | | 2R Transport equivalent of photon conductivity | | hC Compton wavelength | | µo Permeability of vacuum | | µm Magnetic permeability | | µr Reduced nuclear mass | | µr Reduced nuclear mass in electron mass units | | µa Linear mean radiance weighted absorption coefficient | | µf Linear mean flux weighted absorption coefficient | | µ β Linear extinction coefficient at frequency Ψ0 | | µ a Linear absorption coefficient at frequency Ψ0 | | µ a0  Linear absorption coefficient at frequency for stimulated emission | | µ s Linear scattering coefficient at frequency | | µTLinear transport extinction coefficient at frequency Ψ0 | | µSt Linear transport scattering coefficient at frequency | | µP.p T/ Planck mean absorption coefficient | | µR.p T/ Rosseland mean extinction coefficient | | MDere Atomic electric dipole moment | | MeR Molecular electric dipole moment | | Q Photon wave number | | p2 Density operator | | pO Canonical (energy) density | | pf Density per unit volume of final states per energy interval | | pf˙0 In general, photoabsorption cross section corrected for stimulated (induced) emission under LTE conditions ˙0D ˙[Œ1 — e—h =.kT/Qe] if n−l n0l−0 n−l i 1 | | cT s  Total scattering cross section at frequency Ψ0 | | cT˙s.ı/ Differential scattering cross section at frequency Ψ0 for phase angle | | Ζ˙ij Screening constant | | Ζ.bb/ Bound–bound cross section | | Ζ˙LJ Lennard–Jones molecular diameter or range | |  | |