

Deflation Fusion Calculations for Relativistic Proton

Variable Value	Variable Units	Variable Name	Variable description
Constants:			
1.60218e-19	coul	q	Particle charge
2.99792e+8	m/s	c	Speed of light
6.62608e-34	kg m^2/s	h	Planck's constant
5.39121e-44	s	tp	Planck time
1.00000e-18	s	tatto	One attosecond
9.10939e-31	kg	me0	Rest mass of electron
1.67262e-27	kg	mD0	Rest mass of proton
1.25664e-6	N/A^2	mu0	Mu0, the magnetic permeability of the vacuum
8.85420e-12	F/m	e0	Epsilon0, the electric permittivity of the vacuum
3.14159		Pi0	Pi
9.27401e-24	A m^2	muB	Bohr magneton - the electron magnetic dipole moment
1.41061e-26	A m^2	muD	Proton magnetic dipole moment
8.98755e+9	m/F	Cc	Coulomb constant
6.24151e+18		eVJ	eV per J
Initial estimate for calculation:			
9.23287e-17	m	lambda0	Estimate of lambda for electron
First stage estimates			
1.84657e-16	m	dde	Distance between proton and deflated electron centers (=lambda0*2)
1.38493e-16	m	Rdef	Radius of deflated hydrogen state (=lambda0*3/2)
6.76596e+3	N	Fde	Coulomb force between proton and electron (=Cc*q*q/dde^2)
6.75088e+7	N	FMde	Magnetic force between proton and electron (=3*mu0*muD*muB/(2*Pi0*dde^4))
4.15533e-9	J	Ude	Magnetic binding energy between proton and deflated electron (= mu0*muD*muB/(2*Pi0*dde^3))
2.59355e+10	eV	Ude1	Ude in eV (= Ude*eVJ)
2.49877e-12	J	UCde	Coulombic binding energy between proton and deflated electron (=2*Cc*q*q/dde)
1.55961e+7	eV	UCde1	Coulombic binding energy UCde in eV (=UCde*eVJ)
2.59511e+10	eV	Utot	Total deflated state binding energy (=UCde1+Ude1)
9.23e-17	m	lambda	Deflated electron max de Broglie wavelength (~=lambda0)
7.17662e-18	kg m/s	pe	Deflated electron momentum (=h/lambda)
2.15141e-9	J	Ee	Deflated electron kinetic energy (=SQRT((pe*c)^2+(me0*c^2)^2)-me0*c^2)
1.34281e+10	eV	Ee1	Deflated electron kinetic energy in eV (=Ee*eVJ)
2.62791e+4		gamma	Electron gamma (=Ee/(me0*c^2)+1)
2.00641e-9	J	ED	Deflated proton kinetic energy (=SQRT(((pe)*c)^2+(mD0*c^2)^2)-mD0*c^2)
1.25230e+10	eV	ED1	Deflated proton kinetic energy in eV (=ED*eVJ)
1.53115e+1		gammaD	proton gamma (=Ee/(mD0*c^2)+1)
1.06983e+0		ratio	Ratio of (mass proton)/(mass electron) (=gammaD*mD0/(gamma*me0))

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Energy borrowing requirements without Lorentz force considerations			
-6.574e+2	eV	Eb1	Energy to borrow to make state feasible ($=Ee1+ED1-U_{tot}$)
-1.05327e-16	J	Eb	Energy to borrow to make state feasible ($=Eb1/eVJ$)
5.17437e-1			Electron kinetic energy / total binding energy ($=Ee1/U_{tot}$)
1.66295e+3			(Magnetic binding energy)/(Coulombic binding energy) ($=U_{de1}/U_{Cde1}$)
5.27287e+64	s	th	Heisenberg limit on time in state ($=(h/(4*\pi0))/MAX(Eb,1e-99)$)
5.27287e+82	attoseconds	th1	Heisenberg limit on time in state in attoseconds ($=th/tatto$)
Centrifugal forces			
2.99792e+8	m/s	se	Speed of electron ($=c*SQRT(1-1/(\gamma^2))$)
2.99152e+8	m/s	sD	Speed of proton ($=c*SQRT(1-1/(\gamma^D)^2))$)
9.22300e-17	m	rD	Radius of proton rotation ($=dde/(1+se/sD)$)
9.24273e-17	m	re	Radius of electron rotation ($=dde-rD$)
2.32777e+7	N	Fce	Centrifugal force on electron ($=(me0*\gamma)*se^2/re$)
2.48501e+7	N	FcD	Centrifugal force on proton ($=(mD0*\gamma^D)*sD^2/rD$)
Non-Lorentz force balance			
4.81278e+7	N	FcTotal	Total centrifugal force ($=Fcd+Fce$)
6.75155e+7	N	TfNL	Total non-Lorentz forces ($=Fde+FMde$)
Lorentz force considerations			
2.24031e+14	T	Be	B of proton on electron ($=(\mu0/(4*\pi0))*\mu D/(dde^3)$)
1.07607e+4	N	Lfe	Lorentz force on electron ($=q*se*Be$)
1.47289e+17	T	BD	B of electron on proton ($=(\mu0/(4*\pi0))*\mu B/(dde^3)$)
7.05947e+6	N	LfD	Lorentz force on proton ($=q*sD*Bd$)
7.45858e+7	N	Tf	Total binding (centripetal) force ($=Fde+FMde+Lfe+LfD$)
0.09479			Lorentz proportion of binding force ($=(Lfe+LfD)/(Fde+FMde+Lfe+LfD)$)
Miscellaneous values			
1.19785e+5	N	Fcas	Casimir force upper limit approximation $=(h*c*\pi0/(480*\lambda^4))*(\pi0*(\lambda/2)^2)$
5.16227e+23	Hz	Freqe	Frequency of electron orbit ($=se/(2*\pi0*re)$)
5.16227e+23	Hz	FreqD	Frequency of proton orbit ($=sD/(2*\pi0*rD)$)
9.72391e+32	m/s^2	ae	Acceleration of electron ($=se^2/re$)
9.70315e+32	m/s^2	aD	Acceleration of proton ($=sD^2/rD$)
4.95490e-26	kg	mdH	Mass of deflated hydrogen ($=me0*\gamma+mD0*\gamma^D$)
1.67353e-27	kg	mH	Mass of hydrogen ($=me0+mD0$)
29.60738			Mass ratio ($=mdH/mH$)
1.46276e-12	J	ue	Uncertainty energy ($=h^2/((8*\pi0^2*mdH)*(3*\lambda)^2))$)
9.12984e+6	eV	ue1	Uncertainty energy in eV ($=ue*eVJ$)