

Newtonmas Carols 2007a

We Three Quarks
(sung to "We Three Kings") Fairfield, VA

We three quarks fine particles are.
Bearing charm we travel afar.
Fields and forces, spin of course is
Multiplied by h-bar.
Oh, Quarks are wondrous, quarks are
light.
Quarks have colors, clear and bright.
Still misleading, still exceeding
All the physicists' insight.
We three quarks trade gluons all day.
All baryons are made in this way.
Confined inside, we always hide
Unseen forever stay.
Oh, quarks are wondrous, quarks are light.
Quarks stay smugly out of sight.
Still misleading, still exceeding
All the physicists' insight.

Here in Static Equilibrium
(sung to "Winter Wonderland," starts with
"Sleigh Bells Ring")
by Alvin Lee, Wakefield High School, Arlington
VA, 1985

All my moments have been canceled,
Sum of forces is zero,
I'm fully inert, and doing no work,
Here in static equilibrium.
Every push meets another;
Every pull has a counter;
The state I allude is true lassitude;
Here in static equilibrium.
All my forces balance out exactly.
You can even put me to the test.
Push me out in any direction,
And you'll find I'll no longer be at rest.
Can't you see that I'm happy?
Sitting here, calm and mellow?
Don't want to go home, so leave me alone.
Here in static equilibrium.

Gravity
(sung to "Jingle Bells")
by Alvin Lee, Wakefield High School, Arlington
VA, 1982

A comet hit the earth;
It's made of methane ice.
It makes a giant force.
Now, isn't that so nice?
What made it come here thus?
What made it hit the earth?
The answer's very clear my friend.
It fills you up with mirth.
O-o-o-o-oh!
Gravity, gravity,
Keeps us on the ground.
An apple fell on Newton's head.

What goes up must comes down.
O-o-o-o-oh
Gravity, gravity,
Mass times nine point eight
Remember travel very fast
If earth you must escape.
Walk around the earth.
Keep a steady pace.
If gravity weren't here
You'd float away in space.
Call it what you want,
Call it any name.
This force is sure a heavy weight.
Attraction is its game.
O-o-o-o-oh!
Gravity, gravity,
Keeps us on the ground.
An apple fell on Newton's head,
What goes up must comes down.
O-o-o-o-oh
Gravity, gravity,
Mass times nine point eight
Remember travel very fast
If earth you must escape.

Alternate Beginning

When something hits the earth,
You'll notice in a thrice,
It makes a great big bang,
Now isn't that so nice?
So what makes things fall down?
What makes them go ker-plop?
The answer's in this song, my friend,
We'll sing it 'till we drop.

Photocells
(sung to "Jingle Bells") Fairfield, VA

Dashing through space-time, at the speed
of light
Through vector fields we go, with our
colors bright.
Keeping constant speed, in every frame is
right
Oh, what fun it is to be a photon in the
night.
Chorus:
Decibels, Photo-cells! Now, I'm going to
lase.
Oh, what fun it is to be a boson in the rays.
Hey! Grad of dels, colored gels, diffraction
gratings blaze.
Oh, what fun it is to be a boson in the rays.
Cut across the lab, by a mirror steered
Through the slits we go, nothing do we
fear.
Back again we come, to the screen we've
veered.
Oh, what fun it is to be a photon
interfered.
Chorus:

Nodal Lines
(sung to "Jingle Bells") Fairfield, VA

A day or two ago, I thought I'd check out
light
To see if what I'd learned was absolutely
right.
I held two pencils up, and put them near
my eye,
And when I looked into the light, I knew it
was no lie.
O-o-o-oh!
Nodal lines, nodal lines, shifting all in
phase.
Oh, what fun it is to watch the pattern
formed by waves.
Nodal lines, nodal lines, caused by bending
light.
Oh, what fun diffraction is, unless the
light's too bright.

Here comes Cavendish
(sung to: Here comes Santa Claus)
Kamehameha, HI

Here comes Cavendish,
Here comes Cavendish
Right down Cavendish Lane--
Vixen Blitzen, and all the reindeer
Pullin' on the reins.
Cavendish knows the value of G
So all is merry and bright;
He found out experimentally
Being careful and he's right!

Phrosty, the Photon
(sung to "Frosty, the Snowman") Fairfield, VA

Phrosty, the Photon was quite a quantum
sight,
With zero mass, an endless life, and a
speed approaching light.
There must have been some magic in the
physics lab one year,
For when they studied X-ray beams, old
Phrosty did appear.
Oh, Phrosty, the Photon says he knows
he's not that large,
But he said one day if he comes this way,
he'll give us all a charge.
Thumpity, thump, thump. Thumpity,
thump, thump,
Moving fast as light.
Thumpity, thump, thump. Thumpity,
thump, thump,
Phrosty's out of sight.

<p>Tycho the Psycho (sung to: Frosty the Snowman) Kamehameha, HI</p> <p>Tycho the psycho, was a jolly Danish soul, With an astrolabe and a golden nose, and two eyes as good as gold. Tycho the psycho, he built Uraniborg, And when he was finally dead and gone, They put him in the morgue. There must have been some method in His observations, 'cause when Kepler stole them from the lab Out popped Kepler's Laws. Tycho the psycho never saw a telescope, But his measurements were so darn good, That we know he was no dope.</p>	<p>There'll be tons of snowballs to make. But that won't stop me, From deriving freely. I'll stimulate my mind, my mind. I'll think of views of relativity, And study superfluidity, While drawing free body diagrams in the snow, Trying to learn all there is to know. And may I find a solution of every kind.</p>	<p>In refrigeration,</p> <hr/> <p>The Ideal Physics Song (Tune: "Chestnuts Roasting on an Open Fire")</p> <p>Masses slide down frictionless inclines Wheels will spin eternally, Light rays converge from perfectly straight lines And functions change incrementally. Everyone knows things really don't behave this way And still we all pretend they do. Tiny tots have no spin, so they say And we convince ourselves it's true.</p> <p>We know it's true only to first order That crystals act as if they haven't any border And only freshman have to try To see that E and B point just in X and Y.</p> <p>Remember one is on the order of infinity And dividing by zero ain't so bad With these helpful hints, all is simplicity It's the real world, It's the real world, It's the real world that's sad.</p>
<p>Kepler's Laws (sung to: Jingle Bells) Kamehameha, HI</p> <p>A day or two ago, I thought of Kepler's first. I was so dog-gone proud, I thought that I would burst. The orbit's an ellipse, One focus is the sun, That's his law of ellipses-- Now, isn't this good fun? If we talk about Planets 'round the sun, T squared over R cubed, Always equals one! And if you draw a line, Connecting both of these-- The space swept out in equal times Is equal as two peas! Chorus: Kepler's Laws, Kepler's Laws, Made black and white the gray. Oh, what fun it is to think of Kepler every day -- hey! Kepler's Laws, Kepler's Laws, Made black and white the gray. Oh what fun it is to think of Kepler every day.</p>	<p>Feliz Físicas (sung to Feliz navidad) Jennifer Love</p> <p>Feliz Físicas... Feliz Físicas... Feliz físicas a todas los estudiantes de Gliniewicz Ojála que no olviden Todas sus reglas y formulas Porque así es Fallarán en sus examenes Chorus: Cuando regresen a la escuela Traigan sus libros sobre sus cabezas Estén listo para aprender Y todos se divertirán.</p>	<p>Oh Gravity (Melody: O Christmas Tree)</p> <p>O Gravity, O Gravity, All Newton's theories crowning, Where e'er we be, land, air, or sea, We're subject to your "downing" F equals G, m-one, m-two, All over R squared, yes, it's true. O Gravity, O Gravity, We cannot flee, you guarantee!</p>
<p>I'm Dreaming of a Physics Problem (sung to: White Christmas) Nancy Fung, 1997, Mansfield, MA</p> <p>I'm dreaming of a physics problem, Especially those solved with theorems. Whether there is an X Y plane, Or a complex collision train, I'm hoping there'll be an answer to find, to find. I know there's a holiday break,</p>	<p>If You Throw a Ball on High (to the tune of "Angels We Have Heard on High")</p> <p>If you throw a ball on high Central forces bring it nigh If it starts out upward bound Further east it will be found Cor....iolis In acceleration Cor....iolis In acceleration Use Lorentz's transform law Yes, I see dee tee dee tau Relativity is fun Four vec-tors are quickly done Lor....entz In acceleration Lor....entz In acceleration It you send your twin away She will have a slower day. If you watch each other's clocks Then you have a paradox, Ein....stein In time dilation Ein....stein In time dilation Superconductivity There's no resistivity But it stops at three degrees So we work in the deep freeze. He....lium In refrigeration He....lium</p>	<p>Jared, the Big-Mouthed Student (sung to "Rudolph, the Red-Nosed Reindeer") Michael Atwood, Mansfield, MA, 2000</p> <p>Jared, the big-mouthed student, Had very spikey hair. And if you add Mike Wilkins, You get Mr. G.'s nightmare. None of the other students Could get any class work done. They were constantly distracted, By Mike and Jared's pun. Then one freezing winter day, Mr. G. saved them all, He took Michael Wilkin's desk, And put it in the hall. Then, all of the other students, Could finally get to work. They were very grateful, Especially, Jason Burke.</p>

<p>Physics Wonderland (sung to: Winter Wonderland) Brendan Holland, Washington-Lee HS, 1990</p> <p>Steel balls drop, they're in motion, why they fall, not a notion. But thanks to New-<u>ton</u>, it's all lots of fun, learning in a physics wonderland. Gone away is the Chem-<u>stry</u>, here to stay is the mys-<u>try</u>. Dynamics at play, the knowledge will stay, learning in a physics wonderland.</p> <p>In the lab room we will build with LEGO, making cars that run by grav-<u>i-ty</u>. Accelerating masses, we can time them, and find their vert-<u>i-cal</u> vel-<u>oc-ity</u>.</p> <p>Later on, we will rewrite, to keep our grades from dropping outta sight. To face unafraid the grades that we made, learning in a physics wonderland!!</p>	<p>that's the key.</p> <p>Oh, en-er-gy, oh, en-er-gy, you are conserved in spite of me. Your conservation is the law, you're not used up, just changed, that's all. Oh, en-er-gy, oh, en-er-gy, you are conserved in spite of me.</p>	<p>Shaner</p> <p>Isaac Newton, Isaac Newton Isaac Newton had three laws. Now we have them; if we use them We can explain motion's cause.</p>
<p>Speedy The Visible Light Ray (Sung to: Rudolph the Red Nosed Reindeer) Inaam Algayed, Wakefield High School, 1984</p> <p>Speedy the Visible Light Ray, travels through space real quick. And if you try to touch him, you'll find out that he's not thick. All other E M wavelengths, were left out in the dark to cry, While Speedy the Visible Light Ray was really lighting up the sky.</p>	<p>Awake in Her Dorm Room (To the tune of "Away in a Manger")</p> <p>Awake in her dorm room Late Saturday night The poor physics ma-jor Ponders her plight The problem set's so lo-<u>ng</u> And no end in sight, Of all of her answers Not one was right.</p> <p>She used all the tricks that Her teacher had taught, Expand about zero then Drop x sub-nought Divide the right si-de By modulo Z, If that doesn't wo-<u>rk</u> Let pi approach three.</p> <p>So up in her dorm room At four in the Morn, The poor physics major of All hope was shorn. The sun rose that morning, The stars went away, But through her next classes Asleep there she lay.</p>	<p>Isaac's First Law, not his best law Says things do what they know best. If they're resting, they will stay there; If they're moving, they won't rest.</p> <p>Just a bit more on the First Law That you really ought to know: An outside force that's not canceled Really changes the whole show.</p> <p>Now let's talk about this net force And just what that it can do: It can change the object's speed And or its direction too.</p> <p>Alright, what's next? Law number two One equation and you'll pass: To get the acceleration Take the net force over mass.</p> <p>Last but not least, Newton's Third Law Forces always come in pairs. Always there are equal forces Even for our cheeks and chairs.</p>
<p>Then one foggy physics eve, Roemer came to say, "Speedy with your light so bright, let me time your speed tonight." Then all the other wavelengths, said with all their energy, Speedy the Visible Light Ray, we'll see you in the lab-<u>'ra-tor-Y</u>!!</p>	<p>James Clerk Maxwell (Tune: Good King Wenceslas)</p> <p>James Clerk Maxwell did look out On the fields of Faraday. Where the charge lay round about Scattered this and that a way. Twisted boundaries in and out Raised to strange potentials. If solutions could be found, It would be providential.</p>	<p>Just sit right back and you'll take a test, A test that will make you ache, That makes me stay home today And study without a break...</p> <p>The student wanted to do well, He'd work his very best So he set for studying On a three hour test a three hour test...</p>
<p>Oh Energy (sung to "Oh Christmas Tree") Will Wicker, Wakefield High School, Arlington VA, 1986</p> <p>Oh, en-er-gy, oh, en-er-gy, conserving you's not up to me. Some people say, "Don't waste a Watt!!" They say it's true, I say it's not! Oh, en-er-gy, oh, en-er-gy, conserving you's not up to me. Oh, en-er-gy, oh, en-er-gy, con-ser-va-tion, that's the key.</p>	<p>Then came four equations out With assorted Theorems, Complex singularities, Maxwell didn't fear 'em. Tamed the demons, wrote a book, Set right former errors. Gave to theorists pure delight, And to students terrors!</p>	<p>The material started get hard My brain went into atrophy If not for the caffeine of two cokes I'd really be sleepy I'd really be sleepy.</p> <p>My head set down on the pillow that night And I started dreaming of Mechanics, E&M too, Rotational and Transversal motion, Newton's Law, Vectors and Gaussian Surfaces Tomorrow on my test!!</p>
<p>What's the big deal, what's the fuss? Electric bills are fooling us. Oh, en-er-gy, oh, en-er-gy, con-ser-va-tion,</p>	<p>Newton's Laws (Tune: "My Darlin' Clementine") Karen Gill with Scot Gill, Bob Schurtz, & Robert</p>	

Newtonmas Carols 2007b

An Impulse to Sing
Judy and Bill Franklin (Impulse and Momentum workshop 1999) (To the tune of "The Yellow Rose of Texas ")

Momentum is a concept
As real as it can be;
The product of an object s mass
And its velocity.

Its direction and its size are fixed.
They never change a bit,
Unless a force acts for a time
(An impulse acts on it).

It takes a mile to stop a train
That is loaded down with freight.
Although velocity is slow,
Its mass is very great.

A bullet from a rifle
Is rather short on mass.
But deadly speed it has to spare,
So duck and let it pass.

To set a thing in motion,
To get it off the dime,
We must apply an impulse;
We push it for a time.

It s just as hard to stop it.
Here, too, impulse we need.
Both time and force will slow it
And make it give up speed.

Momentum is a vector,
So objects will not swerve,
Unless some sideways impulse
Is used to make them curve.

Momentum is a concept
As real as it can be;
The product of an object's mass
And its velocity.

Yesterday
(Ode to a Black Hole) by Joel Gilmore
(Sung to: "Yesterday" by the Beatles)

Yesterday,
That horizon seemed so far away!
Now it looks as though I'm here to stay...
Oh, I believe in yesterday.

Suddenly,
The whole sky is closing in on me!
And my time is running slowly
It's general rel-a-tiv-ity

Why, I can't cross back now I know

space-time has flipped.
Black holes really suck, and
I feel a little ji-i-i-ipped.

Yesterday,
My poor feet were not so far away,
Now they're stretched out to infinity.
Now here's that singularity.

Mmm-mm-mm-mm-mm-mm-SPLAT!

Copyright Joel Gilmore 2004

The Bill Gates Song
(to the tune of "The Christmas Song")

Netscape roasting on an open fire,
Apple begging on its knees,
Photo popping up on Time magazine,
Yes, Bill Gates dreams of days like these!
Everybody knows he's never fully satisfied,
Throws himself behind each task,
World dominion is his company's goal.
Well, hey, is that so much to ask?
He knows the world is in his sway,
We'll buy whatever software he might toss
our way,
We'll surf his Internet, watch his TV,
He'll take us anywhere we ask him--for a fee.

And so we're offering this simple prayer,
To Bill and all his MS grunts:
Since we all follow any standard you write,
Make it good, please,
Make it good, please,
Make it good, please, just once!

$5.14159/\pi$
by Greg Crowther
(sung to the tune of 867-5309/Jenny
(written by A. Call and J. Keller)

Jenny Jenny, look at that homework;
I see your method, and I'm afraid it won't
work.
You study hard, but now you've reached the
stage
Where you're just staring at the circles on
the page.

Jenny, what is this number?
Tell me how it's defined.
Jenny, plug in this number:
Three point one four one five nine.
(Three point one four one five nine.)
Three point one four one five nine.
(Three point one four one five nine.)

Jenny Jenny, you should know better;
This is not just another Greek letter.
It's a term that relates two important
parameters;

If you know the circumference, you can
find the diameter.

Jenny, you need this number;
You should keep it in mind.
Jenny, plug in this number:
Three point one four one five nine.
(Three point one four one five nine.)
Three point one four one five nine.
(Three point one four one five nine.)

You got it, you got it, you got it!
You got the answer -- take a look.
You got it, you got it, you got it!
It's in the back -- it's in the back of the
book.

Jenny, what is this number?
Tell me how it's defined.
Jenny, plug in this number:
Three point one four one five nine.
(Three point one four one five nine.)
Three point one four one five nine.
(Three point one four one five nine.)

Jenny Jenny, look at these problems.
(Three point one four one five nine.)
Aren't you glad you know how to solve
them?
(Three point one four one five nine.)
Three point one four one five nine.
(Three point one four one five nine.)
[repeat and fade]

The First Nobel
(This carol is sung to the tune of "The First
Noel")

The first Nobel Mr. Resnick did say
Was given to Roentgen for finding X-rays
He look-ed out and saw his wife's hand
Encircled by her wedding band.

Nobel, Nobel, Nobel, Nobel
He gave us dynamite
He gave us del

The first Nobel winner worked night and
day
To find things to do with his new X-rays
He shot then at his friends who thought
him quite wise
Until they had children with seventeen
eyes.

Nobel, Nobel, Nobel, Nobel
He gave us dynamite
He gave us del

<p>O Gravity Brother Robert W. Harris.,Iona Prep</p> <p>When something hits the earth, You'll notice in a trice, It makes a great big bang, Now isn't that so nice? So what makes things fall down? What makes them go ker-plop? The answer's in this song, my friend, We'll sing it 'till we drop. Oh! Gravity, Gravity, Keeps us on the ground. It was explained by Newton, (The scientist renowned!) Gravity, Gravity, Mass times nine-point-eight. Is a vector pointing down, That's sometimes known as "weight."</p> <p>Walk around the earth. Keep a steady pace. If gravity weren't there, You'd float away in space. Now some call it a push-- Well, call it any name, But gravity will always PULL-- Attraction is its game! Oh! Gravity, Gravity, Keeps us on the ground. It was explained by Newton, (The scientist renowned!) Gravity, Gravity, Mass times nine-point-eight. Is a vector pointing down, That's sometimes known as "weight."</p>	<p>It you send your twin away She will have a slower day. If you watch each other's clocks Then you have a paradox,</p> <p>Ein.....stein In time dilation Ein.....stein In time dilation</p> <p>Superconductivity There's no resistivity But it stops at three degrees So we work in the deep freeze.</p> <p>He.....lium In refrigeration He.....lium In refrigeration.</p> <hr/> <p>The First Nobel (This carol is sung to the tune of "The First Noel")</p> <p>The first Nobel Mr. Resnick did say Was given to Roentgen for finding X-rays He look-ed out and saw his wife's hand Encircled by her wedding band.</p> <p>Nobel, Nobel, Nobel, Nobel He gave us dynamite He gave us del</p> <p>The first Nobel winner worked night and day To find things to do with his new X-rays He shot then at his friends who thought him quite wise Until they had children with seventeen eyes.</p> <p>Nobel, Nobel, Nobel, Nobel He gave us dynamite He gave us del</p> <p>The first Nobel Mr Resnick informs Was given to Lorentz, but not for transforms He shared it with Zeeman for structures so fine In magnetic fields they saw two lines</p> <p>Nobel, Nobel, Nobel, Nobel He gave us dynamite He gave us del</p> <p>The third Nobel was to the Curies For their seeing radioactivities They experimented and thought it a lark Until they both started to glow in the dark.</p> <p>Nobel, Nobel, Nobel, Nobel He gave us dynamite</p>	<p>He gave us del</p>
<p>If You Throw a Ball on High (to the tune of "Angels We Have Heard on High")</p> <p>If you throw a ball on high Central forces bring it nigh If it starts out upward bound Further east it will be found</p> <p>Cor.....iolis In acceleration Cor.....iolis In acceleration</p> <p>Use Lorentz's transform law Yes, I see dee tee dee tau Relativity is fun Four vec-tors are quickly done</p> <p>Lor.....entz In acceleration Lor.....entz In acceleration</p>	<p>The first Nobel Mr Resnick informs Was given to Lorentz, but not for transforms He shared it with Zeeman for structures so fine In magnetic fields they saw two lines</p> <p>Nobel, Nobel, Nobel, Nobel He gave us dynamite He gave us del</p>	

