

*Located underground near Geneva, Switzerland, the Large Hadron Collider (LHC) helps scientists study and understand how the smallest particles of matter interact with one another. The LHC propels atomic particle beams along a 17-mile-long ring.*

## Looking for the Smallest Spark of Everything

There are the things the world is made of,  
things we can see and feel, and then  
there are the things even smaller, things that seem  
to exist only when we are looking right at them.

5 So beneath the level of molecules are atoms,  
and beneath the level of atoms, we find  
protons, electrons, neutrons; and beneath that—  
what, exactly? Because we are talking about  
everything here: your fingernail,  
10 the candy at the back of your mouth,  
the coffee your teacher drank this morning,  
your little sister, and the stuffed dog  
she used to carry around with her everywhere.  
And everywhere.

15 Everything and everywhere  
are made up of the same stuff, whatever  
it is. How do we find it? We can listen for it  
in the wavelengths from deep space,  
talking back to us from unimaginable  
20 distances. Or we can build long,  
deep circular tunnels beneath the surface  
of this Earth and race particles  
(like racing cars, only very tiny cars  
flashing along at close to the speed of light)  
25 until everything we think we know  
bangs against everything else we know.

And there, in the explosion, in the darkness,  
briefly incandescent, they appear:  
the quarks, the leptons, and the bosons;  
30 the baryons and the mesons. Their names  
sound like dinosaurs or maybe bands  
playing terrible music in someone's garage.

The one thing we know for sure  
is that they spin. This is how gravity  
35 enters our world, how our world is held  
both together and apart, what keeps  
together the pencil in your hand right now

as well as separate from, say,  
Jupiter. They spin, and it is only down there  
40 in the darkness—in the vast garage  
where physicists jot down  
what they can, whatever seems most real—  
that they let us perceive their wild dancing,  
combusting to the music they make.