

# THE DANCE OF ENTANGLEMENT

BY MICHAEL MENDELSON

OK, you all knew that 2005 has been designated “The Year of Physics”, right? This year is the centenary of the year that Albert Einstein published many important papers, including his Theory of Special Relativity (remember  $E=mc^2$ ). OK, did you know that Einstein was also a fiddler? Well, not exactly a *folk fiddler*, but he was actually a fairly accomplished amateur violinist who enjoyed playing chamber music with friends. So if you’re the editor of an international physics journal with a sense of humor and an interest in folk music, what do you do to help celebrate this important event? Commission an original fiddle tune of course!

*Physics Today* is an international journal of theoretical and applied physics. This is serious stuff most of the time, but there are exceptions. Last year Stephen Benka, editor-in-chief of the journal, decided to do something special for this special year. It seems that in addition to his editorial duties, Steve is also a musician and contradancer. So Steve solicited contributions from a number of physicist/mathematician/lyricists like Tom Lehrer (of *Vatican Rag* fame who contributed parodies of Gilbert & Sullivan songs with physics-related lyrics) and others to fill out the special section. He was familiar with my tune as well as the fact that I have a degree in physics. I guess it seemed like a natural combination to him to see if he could coerce a tune from me. He emailed me with a request for an original composition for the special edition of the journal. The final result of Steve’s work is five pages of fun and music amongst technical articles about quantum mechanics and biological physics in the July 2005 issue of *Physics Today*.

The tune of mine Steve chose to publish is a tango *El Baile de los Entrelazados* (*The Dance of Entanglement*). The title alludes to the concept of “quantum entanglement,” a hot topic in the field of physics these days. Steve suggested the title and actually consulted his colleagues in Argentina to make sure we were using the proper term in use by physicists down there. So far, so good.

Now I’m sure you’re asking yourself “What does quantum mechanics have to do with the tango?” Not much really, and the connection here is admittedly

pretty tenuous (we mainly went with the title because it sounds cool), but here goes. Briefly, quantum entanglement is a phenomenon wherein two particles (e.g. electrons) can be separated by an arbitrary distance, yet a change to one particle will instantly affect the other; they are “entangled” or entwined by their quantum mechanical properties. The tango on the other hand is often perceived

as a dance and music of intense emotional connection. Picture in your mind the smoldering intensity of a couple dancing the tango in a smoky, dimly-lit Buenos Aires night club. There are few dances where the dancers are more closely intertwined than this! The two dancers are in tight synchrony with each other. So, a couple of entangled particles and an entangled couple of people. Makes sense doesn’t it?

I suppose I should here offer a disclaimer and apology to any ethnomusicologists out there. I can’t really claim that *El Baile de los Entrelazados* is based on a formal knowledge of the tango form. Like many of my compositions, the melody just “appeared” one day and I wrote it out. But it certainly mirrors my impressions of the tango. It is a lot of fun to play with violin and accordion (bandoneón?), late in the evening with the lights turned down low. Put some emotion into it! Some intensity! It’s that kind of tune!

You can find *El Baile de los Entrelazados* along with many other original tunes, (jigs, reels, waltzes, rags, etc.) on my web site: [www.SlidingScaleMusic.com](http://www.SlidingScaleMusic.com). Just follow the links to the “Compositions” section and you’ll find lead sheets for the tunes. You can also hear tunes clips and/or midi-based performances of many of the tunes there. Have fun!

*Michael Mendelson is a fiddler, guitarist and composer who lives in the Santa Barbara area. He currently plays in a number of contradance bands including Chopped Liver, The Fiddle Tunas and Key Ingredients, and the legendary old-time band The Gap Tooth Mountain Ramblers. He has recorded a CD of original tunes entitled A Fiddlers Notebook.*

**EL BAILE DE LOS ENTRELAZADOS**  
(THE DANCE OF ENTANGLEMENT)

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