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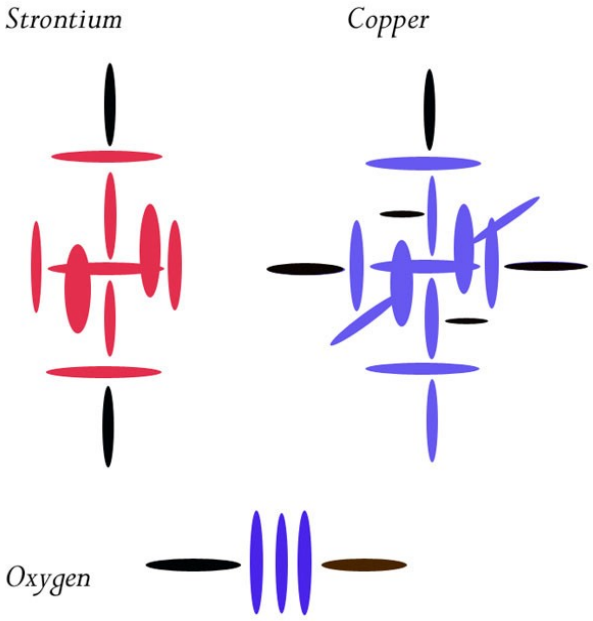
The Charge Profile of Sr_2CuO_3

by Miles Mathis

In two previous papers I questioned the theory of electron breakup into spinons, holons, and orbitons. In the second paper I did a close analysis of the *Nature* letter of Schlappa et al., showing many pushes. Here I will show how to read the data correctly.

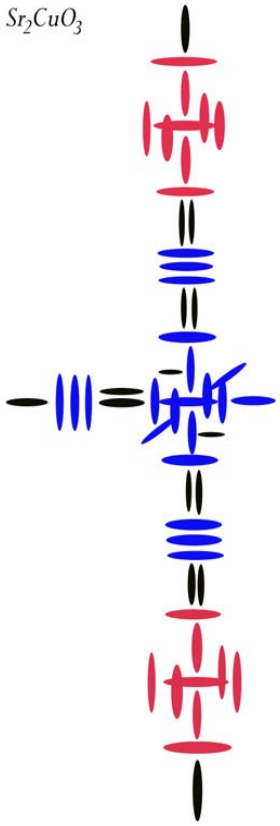
We start with a diagram of the molecular nuclei, something that has not been done before me. To learn my method of nuclear construction, you will have to consult my paper nuclear.pdf and subsequent papers.



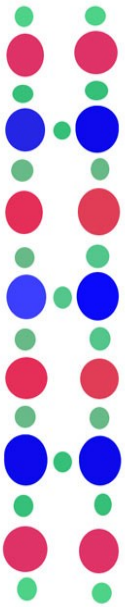
Those are the standard separate nuclei of the constituent elements. A blue disk indicates an alpha (helium nucleus), a red disk indicates a double alpha, and a black disk indicates a proton. I normally simplify my nuclear diagrams by leaving the neutrons out of it, and I will continue that here. Since I am diagramming charge channeling, only the charged particles need be diagrammed. Neutrons also take part in channeling—usually by blocking—but we don't need to get into that here. You can see how copper has the three openings to accept the three oxygens. The three outer black disks indicate that only one proton is plugged into a slot that can accept two protons. A blue disk isn't full until two protons are in the slot, as in the other three outer places. So the black "prongs" on oxygen can plug in there.

As I have shown in previous papers, the presence of a larger element can cause a smaller element to re-arrange its outer protons (in the right circumstances). Since the larger element is recycling a stronger charge field than the smaller, a close pass of the two elements can force the smaller element to match

the channels of the larger—but only in the 4th or outer level. So strontium causes a minor re-arrangement in copper, to allow this configuration:



The oxygen nuclei act as charge boosters, in order to match the charge field of copper to the charge field of strontium. Without the triple alpha centers of oxygen boosting the charge field density (or focusing it), the charge field of copper would be too weak to fit the charge field of strontium. And that third oxygen out to the side allows this long chain to bond to other chains of the same sort, creating three-dimensional molecules of Sr_2CuO_3.



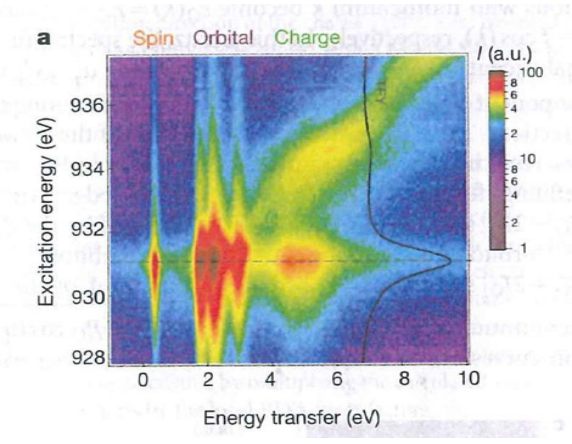
If we simplify even further, we can show the bonding in a slightly larger configuration. Although that is really 3D, of course, it could appear 2D or even 1D, depending on your resolution. Current theory calls Sr_2CuO_3 one-dimensional, and you can see why. It creates these long chains that have almost no width, so that the construction is almost linear. A line is 1D, so they call it one-dimensional. It isn't 1D, but we will let it pass for more important criticisms.

The third oxygen might also go in line with the other oxygens, making this chain even narrower. In that case the molecular chain of Sr_2CuO_3 would be only one nucleus wide. We will consider both possibilities as we try to explain the data of Schlappa et al.

To do that, we have to go back to the slightly more complex diagram, which shows the shape of each nucleus and its charge channels. Whether we take the double chain or single, we have to ask how the mainstream theory diagrams the electron orbitals. Either in my diagrams or the implied diagrams of the mainstream, we have bonds that must be blocking orbitals in the main line. Electrons, being real, can't pass through the chain, can they? Therefore the electrons would all have to orbit the chain. Obviously, this gives the mainstream major headaches, since it would interfere with their various shapes and clouds. Of course they have never begun to address this mechanical problem. They just ignore it along with all the other mechanics. My theory both addresses it and solves it. My electrons don't orbit the nucleus, so the problem evaporates. My electrons circle the holes in the protons (the charge openings at the proton axes), and so they carry the orbital quantum number that way. As you can see, this gives them their own angular momentum plus the angular momentum of the proton they are paired with. My nucleus has many levels, and each level has a different angular momentum.

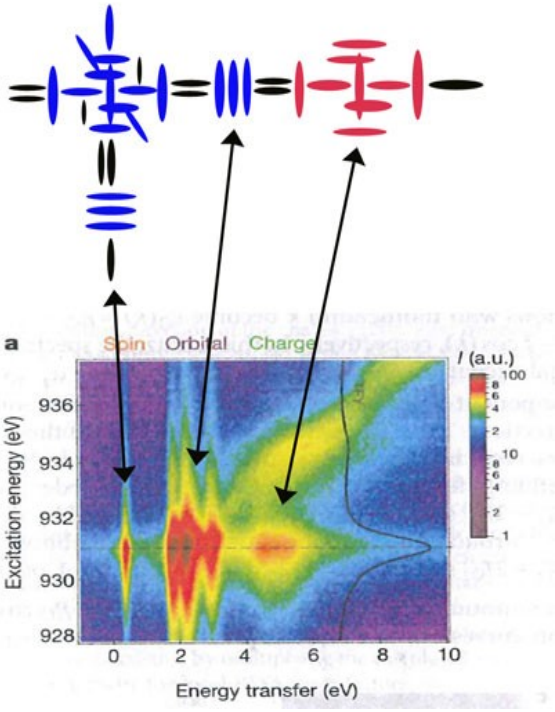
But according to my theory, we don't even need to look at electron orbitals, no matter how caused. With three elements involved here, we would have too many orbitals to track, far more than the three we see in the *Nature* paper. According to current theory, copper has one electron in the outer orbital, strontium has 2, and oxygen has 6. They treat each orbital as one interaction with the incoming photon energies, and look only at the outer orbitals, but it has never been clear that this is correct. For instance, how does that one electron of copper shield the next inner 18 from the incoming photons? Even if the one electron is a cloud, the photons are moving much faster than the electron. How can one slow-moving electron block an entire field of smaller, faster moving photons? Illogical.

In fact, data from RIXS indicates that theory *isn't* correct, as I showed in my last paper. The data from Schlappa et al. clearly indicates five maxima, not three, which is strong proof that assigning the maxima to electron orbitals is wrong.



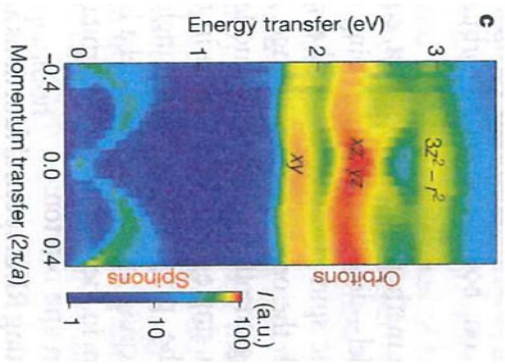
As you can see clearly in that graph, we have at least five maxima, and the one furthest right may be double. They assign the left one to spin and the right one to charge, but that is illogical in at least half a dozen ways, as I spent a great deal of time showing in the previous paper. They have mis-assigned them for the express purpose of preventing the analysis I am doing here. They have no way to assign more than three orbitals, and they don't want you to see that these maxima are indicating at least five channels in the charge field of Sr_2CuO_3. Once you see that for yourself, not only their current theory of orbiton separation falls, but the entire theory of electron orbitals falls with it.

Now let me tell you what they are really seeing in the last graph. They are seeing the charge channel signature of each element, when it is in this particular chain. The three main maxima—which they have assigned to orbitals—are the three alphas in oxygen. The sharp maximum to the left—which they have assigned to spin—is the charge profile of copper here. And the diffuse maximum to the right is strontium. They are seeing this part of the chain:



Let me explain exactly how I know that. We will start with strontium. Remember that in my diagrams, strontium is just krypton with protons plugged in top and bottom. Krypton is unreactive because it has perpendicular alphas all round, where it meets the ambient charge field. It channels charge poorly, that is to say. Well, strontium still has this problem everywhere except top and bottom. It channels charge axially, but channels very weakly to any side. Those four carousel positions channel, but they channel weakly, and that is what we are seeing. Remember, this experiment is looking at the chain from the side, not from top or bottom. Amazingly, this also explains the slight doubling of the maximum at 4.5, or its spreading along the dotted line. Unless we are looking at the chain from exactly 90 degrees to the side, we will see the strontium carousel positions slightly skewed, with the rear two positions above the near two. This will create the spreading in the data that we see.

Now let us look at the copper maximum to the far left. I remind you that this lowest energy maximum had a strong periodicity in the other graph, which I called a wavelength in my previous paper.



I have turned it on its side to match the other graph and my diagram. We are looking at the strange wave to the left, which they assign to spinons. It is not spinons, it is the charge field emitted by the copper. We get a wave because of that oxygen nucleus attached to the carousel level. We now see that the entire chain spins, and this graph is giving us the rate of spin—which has a value of .4 by these parameters. The copper is recycling the most charge where that oxygen is attached, and least in the position opposite, where the oxygen is emitting in the other direction from RIXS. So we are actually seeing the spin wobble caused by the plugged-in oxygen.

You will say, "All that is suggestive, I admit, but there are many problems. Why aren't the three oxygen maxima the same size, and why does the central one show the same wave as copper?" Those questions are actually pretty easy to answer. The central oxygen maximum is redder because that charge channel is more isolated than the outer two. Remember, all three elements—copper, oxygen, and strontium are all emitting charge out to the side here. And the charge fields will mix and interfere. Charge from above and below will diffuse the outer alphas of oxygen to some extent, but the central alpha will be least affected as a matter of strength, since it is sandwiched between the other two. As for the wave, that is not a problem for my theory, it is more strong confirmation of it. Notice that the wave created in those three maxima goes *up*, just like the wave created by copper. We can almost see the big wave to the left extending up and passing through the three. The wave passes through the first maximum, giving it a small wave. The effect is then increased in the second maximum, due to resonance from the first. But the wave is spent on the second, and has little effect on the third. Besides, the third is being tamped down from the other side by strontium, preventing it from expressing the wave fully. This is another reason the third maximum is weaker.

We may also assume that the three maxima vary for the same reason the strontium maximum is stretched: RIXS is not measuring from directly to the side. RIXS must be looking up a bit. In fact, Schlappa et al. admit it. They tell us in the subtext to figure 3 that the angle is 130 degrees. RIXS is nearer the copper than the strontium.

My reader will say, "Maybe, but why would we see only one set of maxima here? Shouldn't we see a larger part of the chain, with another oxygen above the strontium?" No, because this is a graph of photon energy, not a photograph of the molecule. My analysis has been so complete and so visual, you may begin to think of this graph as a photograph of the chain. But it isn't. It is a measure of the charge field energy, measured by input photons. For instance, if we go up on graph **a** above 6eV, we won't find another oxygen, as you say, and that is because that oxygen, like the other below, is emitting in the 2-3eV range, not the 6-7eV range. By the choice of photon energies, this "picture" is focused on one element of the chain only, not on the whole chain.

By the simplicity of my explanation here, you can see that the mainstream hasn't got a clue. They aren't even close with this pathetic theory of spinons and so on. If some guy like me—who hasn't ever been anywhere near a RIXS device or a even a sample of Sr_2CuO_3—can come in and read their data for them in a straightforward way, it must mean they are completely lost. I was able to do this despite the fact that the letter at *Nature*, which announced their data and theory, was a horrible mess. More than half of it was misdirection, and I suspect much of it was purposeful misdirection. They ignored or downplayed the important data and hyped the unimportant, but it didn't matter. I could see through it anyway.

Why? Well it isn't because I have an IQ of 300 or help from aliens, it is because the answer isn't really that difficult. As you can see from the analysis above, the quantum world is much simpler than the world we have been sold. The math is simpler, the mechanics is simpler, and the theory is simpler. All I have to do is keep a bit of logic and feel my way along, and I can walk right around them. Any fool should have known they were off in left field, since their theory was absurd on the face of it. I knew they were wrong, and I knew there had to be a sensible answer. So I sought the sensible answer.

Contemporary physicists fail because they never seek a sensible answer. They seem to prefer nonsense answers, ones that are outrageously illogical from the first word. Bohr set them on this path, and Feynman showed them how to get famous on it. Top physicists now are mainly interested in fame and prizes, and you don't win fame and prizes these days with sensible answers. The public, the juries, and the journals have all come to prefer magic and mysticism. If you also prefer magic and mysticism, stick with the mainstream: they will always entertain you. If you prefer physics, I suggest you come with me.