

# The Big Bang Theory and the Death of SUSY

If you're a fan of The Big Bang Theory, perhaps you've seen the latest episode, The Retraction Reaction. If not, you might be interested in the following transcript (taken from here). The show has always done a good job of getting the science right.

The episode begins with a Science Friday interview of physicist Leonard Hofstadter by Ira Flatow:

**FLATOW:** So, it has been five years since the discovery of the Higgs boson – what's the next big thing gonna be?

**LEONARD:** Wow, that's hard to say. There's so much going on. We've been collecting tons of data that could revolutionize the way we understand the universe. For instance, there's a particle called a squark, which could prove supersymmetry.

**FLATOW:** That is interesting. Have you found it?

**LEONARD:** What, the squark?

**FLATOW:** Yes.

**LEONARD:** No, no. Wouldn't that be exciting? But we're also looking for the selectron, the gluino and the neutralino.

**FLATOW:** Well, and have you found that?

**LEONARD:** No. Another fun sidenote— I went to high school with a girl named Theresa Gluino, but it didn't cost \$2 billion to find her. She was smoking behind the gym. (laughs)

**FLATOW:** So, what have you found?

**LEONARD:** Uh, nothing, actually. We've got the best equipment and the best minds all working on it. Although, some days I'm, like, ugh we've spent so much money. Why haven't we found anything? What are we doing?

**After a segment in which neuroscientist Amy explains that she doesn't tell physicist boyfriend Sheldon about her new lab equipment since**

**AMY: We've been getting so much more funding than physics, he's been a little sensitive.**

**another scene features Leonard called into the office of a university administrator:**

**LEONARD: I have to say I'm a little nervous.**

**Ms. DAVIS: You should be.**

**LEONARD: Look, I know I screwed up, but it was only one interview. How much damage could it have caused?**

**Ms. DAVIS: Would you like for me to read you the e-mails from donors asking why are they giving us money if physics is a dead end?**

**LEONARD: I didn't say it was a dead end. I just said that I was worried it might be.**

**Ms. DAVIS: So if I just said I was worried you might not have a job next week, how would you feel?**

**LEONARD: Light-headed, and glad you asked me to sit down. Okay, just tell me what I can do.**

**Ms. DAVIS: I'm gonna need you to make a statement saying that you misspoke, and that you're confident the physics community is close to a major breakthrough.**

**LEONARD: You want me to lie.**

**Ms. DAVIS: Look, Dr. Hofstadter, I'm counting on you. I think that you are the smartest physicist at this university.**

**LEONARD: Really?**

**Ms. DAVIS: See? Lies. They're not that hard.**

**Leonard then has this exchange with Penny:**

**PENNY:** Hey, come on, look, you said a few dumb things on the radio – what is the worst that could happen?

**LEONARD:** I may get fired.

**PENNY:** Okay, well, even if you did, you could find another job.

**LEONARD:** Yeah, who wouldn't want to hire the physicist who publicly said physics is dead? Well, I wouldn't put that under "special skills". I can fix it, I just need to write a retraction I don't believe in– basically sell out to keep my job.

**PENNY:** Great, I'll leave you to it.

**He then goes to talk to string theorist Sheldon Cooper:**

**LEONARD:** Sheldon, it's me.

**SHELDON:** What?

**LEONARD:** Look, I know you're mad, but I have to write a statement that says the physics community is close to a breakthrough, and since you actually believe that, I could really use your help.

**SHELDON:** Sorry, I can't.

**LEONARD:** Come on, don't be like that.

**SHELDON:** What? Look. (sighs) Not all science pans out. You know, we've been hoping supersymmetry was true for decades, and finally, we built the Large Hadron Collider, which is supposed to prove it by finding these new particles, and it-it hasn't. And maybe supersymmetry, our last big idea, is simply wrong.

**LEONARD:** Well, that sounds awful. Now I get why everyone hates me.

**Penny later comes in:**

**PENNY:** So you guys are upset because the collider thing disproved your theories?

**LEONARD:** It's worse than that. It hasn't found anything in years, so we don't know if we're right, we don't know if we're wrong. We don't know where to go next...

**PENNY:** Come on. You guys are physicists. Okay? You're always gonna be physicists. And sure, sometimes, the physics is hard, but isn't that what makes it boring?

The episode ends with a visit to the grave of Richard Feynman, and a reference to Feynman's story about how he got himself out of a slump in his work when he was at Cornell:

**WOLOWITZ:** He did so much. And here we are, stuck and letting him down. You know, Feynman used to say he didn't do physics for the glory or the awards, but just for the fun of it. He was right. Physics is only dead when we stop being excited about it.

All in all, a pretty accurate portrayal of the situation in high energy physics theory, with a reasonable take on what to do about it.