

The God Particle

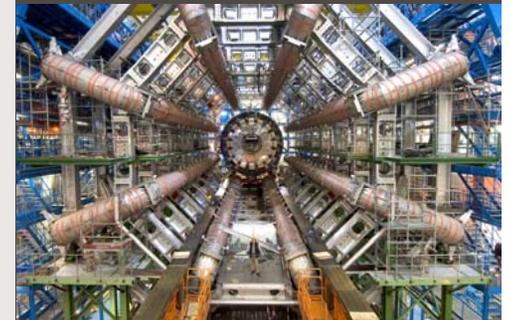
And what did and didn't work for particle physics

T.I. Meyer | Head, Strategic Planning & Communication | TRIUMF

Fusion Communications Summit | Sep 12-13, 2012

Accelerating Science for Canada
Un accélérateur de la démarche scientifique canadienne

Owned and operated as a joint venture by a consortium of Canadian universities via a contribution through the National Research Council Canada
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- Perception is not always reality.
 - Mercedes-Benz
- People with opinions just go around bothering one another.
 - Buddha
- Science is a wonderful thing if one doesn't have to earn one's living at it.
 - Einstein

Higgs boson discovery could usher in 'new, wonderful technologies,' says physicist (+video)

Wichita State University physics director Nickolas Solomey, who spent seven years at CERN, says the discovery of the Higgs could take a long time to fully understand, but that it could lead to groundbreaking technologies.

By Tony Adame, *McClatchy Newspapers (MCT)* / July 5, 2012

12 September 2012

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The New York Times **Science**

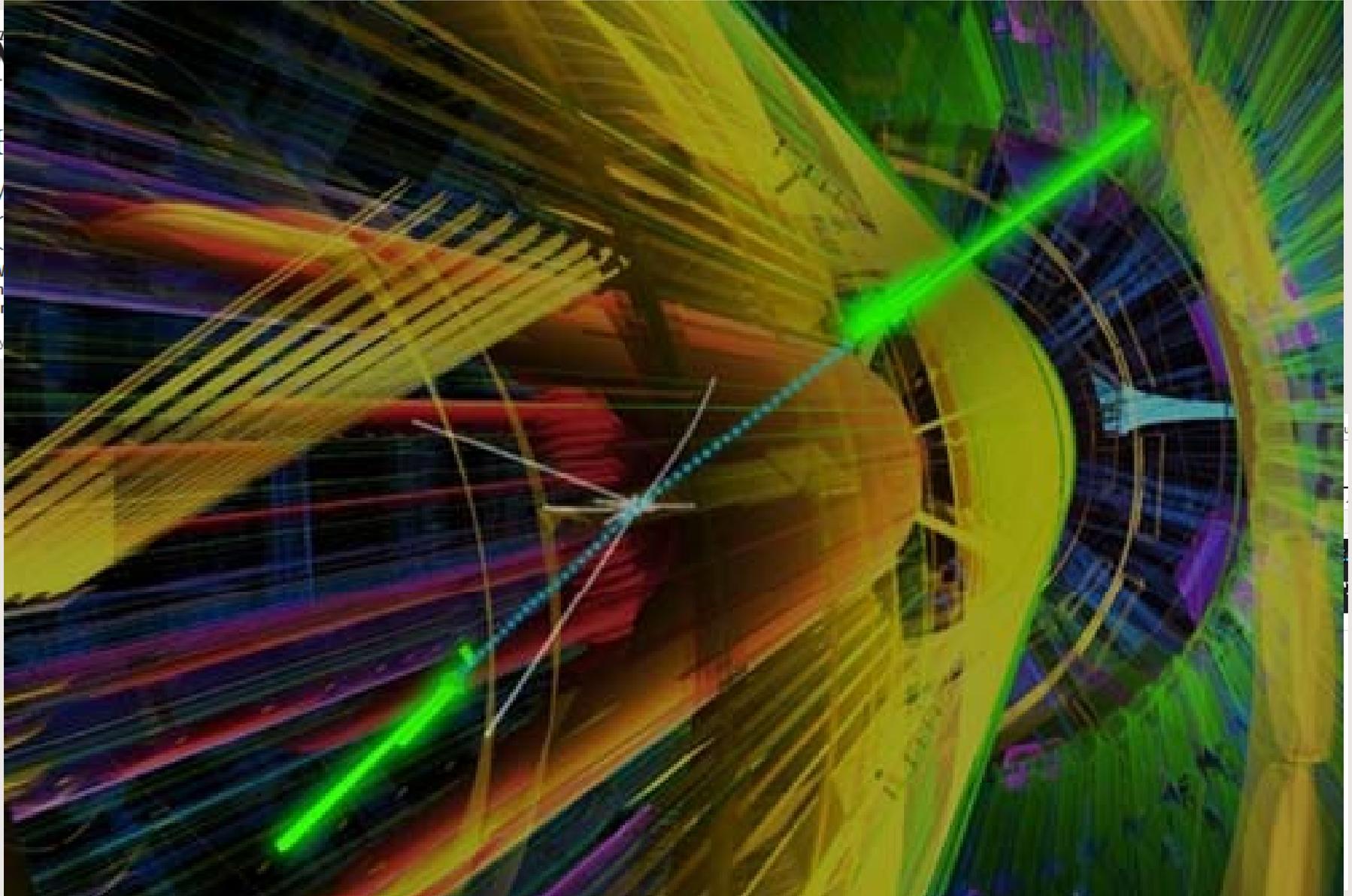
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“STAND WITH ME. WORK WITH ME.
LET'S FINISH WHAT WE STARTED.”

Physicists Find Elusive Particle Seen as Key to Universe







- <http://www.youtube.com/watch?v=VtItBX1I1VY&feature=youtu.be>



The God Particle

- Particle physics recently enjoyed a media frenzy
 - More than a 1 billion people watched the LHC turn on, live, in Sept 2008: Big Red Button day
 - On July 4, 2012, EVERYBODY cared
 - University presidents travelling abroad called back home and said, “Where are we on this Higgs thing? Tell me!”
 - As communicators, we were shocked & awed
 - Did people actually know what a 5σ observation of a Higgs-like boson was?!
- What the hell happened?

- What inspires us about science is wonder
- What keeps us interested in science is opportunity
- What drives us away from science is confusion
- What disappoints us about science is our own impatience

- People love a quest, a journey

- Particle physics community communicated the “Higgs” as a quest
 - With certainty and unity

- Science is part of the human “quest”
 - Quest to understand our role & our purpose
 - Quest to control our environment
 - Quest to grow and expand

- The quest for the Higgs has been 20+ yr journey
 - From the SSC, through LEP, to the Tevatron, to the LHC...
 - Quest reinforced again & again

Quest is a Journey

- Joseph Campbell traced this notion of the quest in the form of a “hero’s journey” through every single major mythology
 - Call to adventure
 - Road of trials
 - The “boon”
 - Return to ordinary world
 - Application of the “boon”

Higgs Journey: What?

- What is the journey?
 - Origins of mass
 - Beginnings of the universe

- Who is the hero?
 - Global community of scientists
 - CERN + all other labs
 - 6,000 people, 120 countries

Higgs Journey: Road

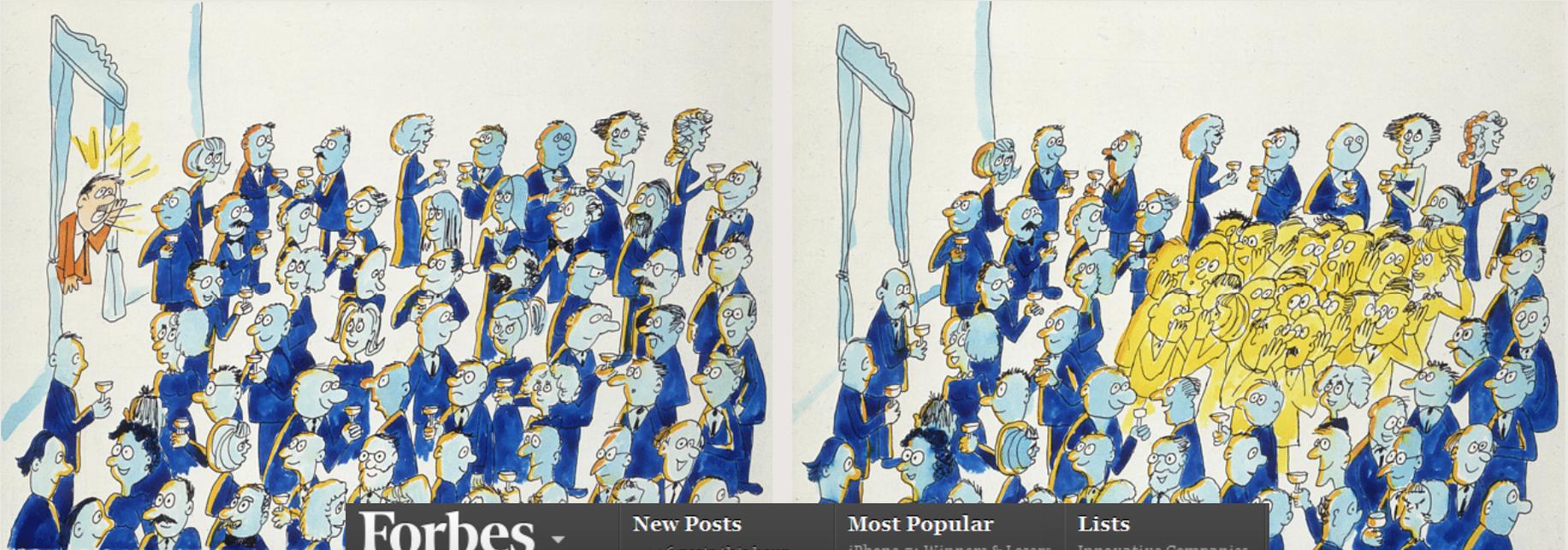
- Incremental progress, so invent milestones
 - Construction of the LHC accelerator
 - Delivery of key components to detector
 - Turning on the accelerator on live television
 - Fixing the accelerator
- Coordinated updates on the physics search with press conferences and advance communications to all partners
- July 4, 2012: discovery of a new particle
 - Confirmed for communicators with <48 hrs lead time

Higgs Journey: Goal/Boon

- Understanding the early universe
- Understanding where mass comes from
- Make/break the Standard Model

- Assert: not many people know what these mean, but they know they've heard them before

Do you have to understand?



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The Higgs Boson: Why You Should Care About the God Particle. And, Sadly, Why You Don't

Higgs Journey: Return

- The Standard Model holds up
 - (of course, we now suspect ANOTHER particle that stabilizes the Higgs mass...)
- This may be where the journey fizzles
 - The goal now is to study the heck out of it
 - Is there a next-step device?

- In 2002, InterAction Collaboration formed
 - Network of communications teams at every major particle-physics laboratory in the world
 - “Set visible footprints of peaceful collaboration across all borders”
 - Synchronize global efforts...
- Activities
 - Meet twice per year
 - Small membership dues to allow modest global initiatives
 - Website and news-release distribution service
 - Symmetry magazine and others
 - U.S. communicator based at CERN
 - Social media presence

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- Unity allows for coherence allows for certainty
- Every lab director, every particle physicist
 - “Post-traumatic growth” from 1990s
 - LHC is to look for origins of mass
 - God particle is a silly name
 - Higgs
 - Find it / don’t find it = win / win
 - We’re all in this together, we will not whine (too loudly) about other sacrifices

Certainty

- The search for Higgs will (& must) conclude
 - Invent milestones when needed (take real risks)
 - Big Red Button day
 - Even in the face of delays, accidents
- Mini-black holes then help
- “Leaks” then help
- Breaking the speed of light then helps

Grass not always greener

- Tevatron turned off
- SLAC's particle physics turned off
- Particle-physics leadership is now offshore
 - Funding (altogether) is stagnating
 - What is the U.S. program?
- “Next machine” has changed names, is holding its breath, and is really gasping...
 - LC, NLC, JLC, ILC, GDE, ... back to LC?

Observations

- There are many, many similarities between particle physics & fusion
 - Inspiring...when you actually stop & share
 - Apparent calamity in the 1990s
 - Complicated roadmaps (e.g., Fermilab future, ILC/GDE)
 - Onshore / offshore elements
 - Machine & detectors/diagnostics – “experiments”
 - Incremental / complicated progress (e.g., can you explain a Ph.D. thesis?) with equations and simulations
 - Some key spin-off/contributed technologies

Observations

- There are many, many differences between particle physics & fusion
 - Level of penetration into the “public” consciousness
 - History
 - Level of budget (present and past), number of agencies
 - Only one of these fields uses the word “God”
 - Personality, personnel
 - “Inspiration” of the Big Bang vs “Inspiration” of saving the world
 - Endgame (discovery vs demonstration)

- Each and every success is unique—and temporary
 - Coordinated communications will always be needed
- Fusion is at a tipping point
 - There is some resignation & cynicism (in many places)
 - And some of the cards we've been dealt, we cannot return
 - Opportunity is very close
- Sharing what truly gets us out of bed each day will ultimately recruit allies and create champions

Merci

Thank You

Questions?

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