ICCF-14
Current Thoughts on the Program

10-15 August 2008 Washington, DC

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ICCF14 Co-Chairman

Naval Postgraduate School

Catania, Sicily

13-18 October 2007

14th International Conference on Condensed Matter Nuclear Science
(ICCF-14)

10-15 August 2008
Washington DC

Hyatt Regency Hotel
on Capitol Hill

Abstract

ICCF-14 will be held in Washington, DC 10-15 August 2007 in the Hyatt Regency Hotel near Capitol Hill, the Washington, DC Mall where the Smithsonian Institution has its primary museums, and with access via the Metro to the greater Washington, DC area. Dr. David Nagel is the Chairman of the Conference and Michael Melich has been appointed Program Chair and Co-Chairman of the Conference. The proceedings of ICCF14 will be published in early 2009 just as the 20th Anniversary of the announcement by Fleischmann and Pons. Our current plans envision the preparation and publication of a series of Cold Fusion Country Histories that will document, country-by-country, the progress of the research over the past twenty years. These histories will be in the language of each country and should be completed prior to ICCF-14. These will form the basis of sessions at ICCF-14 showing the scientific foundation of the field. We are hoping to bring to Washington, DC many of the original researchers, some who may no longer be active, to participate in scientific discussions about their "Prefatory" work. It was their work that has brought us the solid foundation for the scientific development of the extraordinary effects on nuclear processes that hydrogen-in-metals demonstrate under the special conditions identified by Fleischmann and Pons. The sessions at ICCF14 on the scientific work in the various countries, when added to the translated histories, will be edited into a series of books in English to be published in 2009. These books will provide the scientific community the organized material to let the field grow. What has come before is but a preface to what will be presented at ICCF-14 and that in turn will be the prolog for an expanding level of research in Condensed Matter Nuclear Science.

Press Release

8 October 2007

International Conference on Condensed Matter Nuclear Science

The 14th International Conference on Condensed Matter Nuclear Science (ICCF-14) will be held from the 10th through the 15th of August 2008 at the Hyatt Regency Hotel on Capitol Hill in Washington DC. The purpose of this scientific conference is to present and discuss new results on low energy nuclear reactions (LENR), which originally went by the name "cold fusion". The production of unexpectedly large amounts of excess heat in metals heavily loaded with hydrogen is also called the Fleischmann-Pons Effect.

LENR have been studied by hundreds of scientists globally since the field began in 1989. At this time, the experimental evidence for the existence of LENR is strong. Further, many of the characteristics of LENR are already known. Measurement techniques and results obtained with them have been published in over 1000 scientific papers. The mechanisms for such reactions are not yet understood theoretically. Nevertheless, the empirical information shows that LENR produce energy with harmless helium as the primary by-product. In most experiments, there is neither significant immediate radiation nor residual radioactivity. Several start-up companies and other organizations are working on the science of LENR. The emerging results might provide the basis for green energy sources with many applications, such as de salination.

The series of ICCF conferences, which began in 1990, has been held alternatively in North America, Europe and Asia. It is the primary venue for the international community of involved and interested scientists to give and critique papers that describe what was done and found. The papers are then published in the proceedings of the conference.

The conference web site will be hosted by the International Society for Condensed Matter Nuclear Science (www.iscmns.org). The site will have registration, program and other information, with the initial postings before the end of 2007.

David J. Nagel, Research Professor at The George Washington University, is Chairman. Michael E. Melich, Professor at the U. S. Naval Postgraduate School, is the Co-Chairman.

Information and papers on LENR can be found at:

http://www.lenr.org
http://www.newenergytimes.com
http://world.std.com/~mica/cftsci.html
http://www.infinite-energy.com

For information on the ICCF series of conferences, search on ICCF-X,
where X can be any integer from 1 through 13.

To obtain more information on the conference hotel, please go to


Union Station
Hyatt Regency
National Art Gallery
US Capitol
Air & Space Museum
Image © 2007 Sanborn


White House
Union Station
Hyatt Regency
Mall and Smithsonial Institution
US Capitol
Washington
Monument

Hyatt Regency
Washington DC
on Capitol Hill

Goals of ICCF-14

Present Research Results To:

Those who do not follow CMNS:

- What do we know from 19 years of research?

Those actively working in the field:

- What has been learned since the ICCF-13?

How do we present CMNS? Some Ideas

- What we have learned 1989-2007?
  - Country Histories
  - Commissioned Topical Reviews
  - Summary Overviews at ICCF-14 based on Reviews and pre-meeting written, invited research papers
- What have we learned since ICCF-13?
  - Invited Research Papers (manuscripts before meeting)
  - Emerging scientific discoveries, slides/posters

Country Histories

- Written in the language of the country, guided by Country Editorial Board
- Names & dates of meetings held in country
- Names and short biographies of research community
- Summary of research results
- Landmark papers
- ICCF-14 Series under Project Editorial Board, publication in English in time for ICCF-15, 20th Anniversary Series

Commissioned Topical Reviews

- Written by experts in relevant experimental topic, for example, electrochemical heat generation, glow discharge production of radiation.
- Brings together in review article what has been learned written at level of, for example, "Review of Modern Physics".
- Available before ICCF-14. Potential for publication in …..

Who is served by ICCF-14?

- CMNS Research Community
- People who might join CMNS Research Community
- Wider community of those who support research and engineering applications of CMNS

Special Problems of CMNS Communication

- Historical origins and widespread ignorance of the research results.
- Inherently multi-disciplinary experiments which fit badly into discipline defined niches.
- Instability of experimental results, phenomenological theories of limited reliability
- No first principles theories that are widely understood or accepted

What Is the Problem?

In “CMNS” we are faced with multiple observations and experimental results, and multiple conjectures and hypotheses that might explain them.

How can we quantitatively assess the effect of the evidence (experimental results) on our state of knowledge. How does it affect the plausibility of the hypotheses—the degree to which we believe or disbelieve, that is, their *probability*?

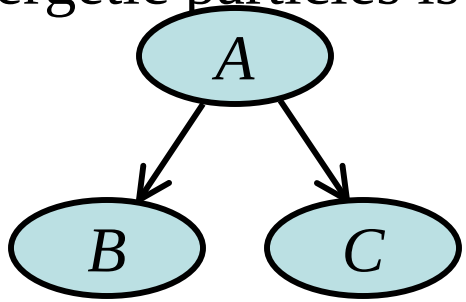
What Is the Problem?

Independent support for a hypothesis. Three propositions: a hypothesis and two pieces of supporting evidence.

A: Nuclear reactions occur at low temperature in solids.

B: Excess heat is observed.

C: Emission of energetic particles is observed.



What Is the Problem?

Alternative explanations.

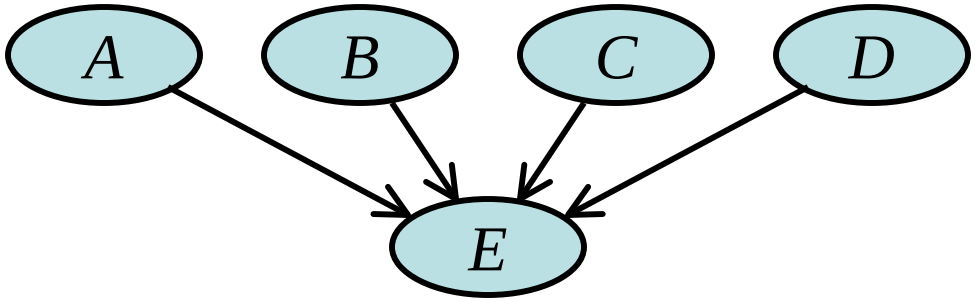
A: Known NR & quantum many-body effects

B: Chemistry / atomic physics

C: “New physics”

D: Error / deception

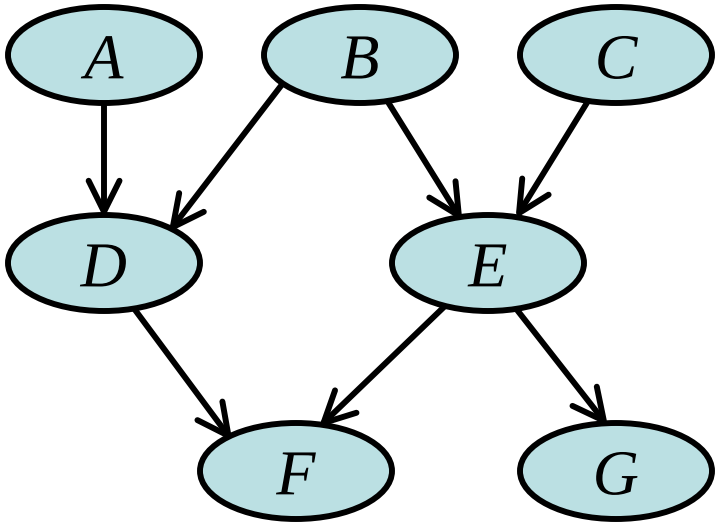
E: Excess heat is reported.



What Is the Problem?

In general there may be a more complicated network of interrelations.

A, *B*, *C*, . . . : The major hypotheses and observations of CMNS?



Bayesian Network to Answer the Question?

Would like to end up with an estimate of the conditional probability that CMNS experiments are due to nuclear processes given the heat and charged particle evidence.

Propositions for Network

A. There exist mechanisms to transfer energy from DD fusion to Pd lattice without high energy emissions.
B. DD fusion can occur in Pd lattice, despite coulomb barrier, at rates “substantially greater” than expected from free particles.
C. Heat observed without high energy emissions, gammas and neutrons
D. Heat observed correlated with ^{4}He; tritium, ^{3}He observed

Propositions for Network—2

E. High energy particle emissions from d-charged Pd film

F. Effects observed in hydrogen + nickel

G. There exist general mechanisms to suppress coulomb barriers for ions in metal lattices

H. Effects observed with deuterium + titanium

I. Transmutation

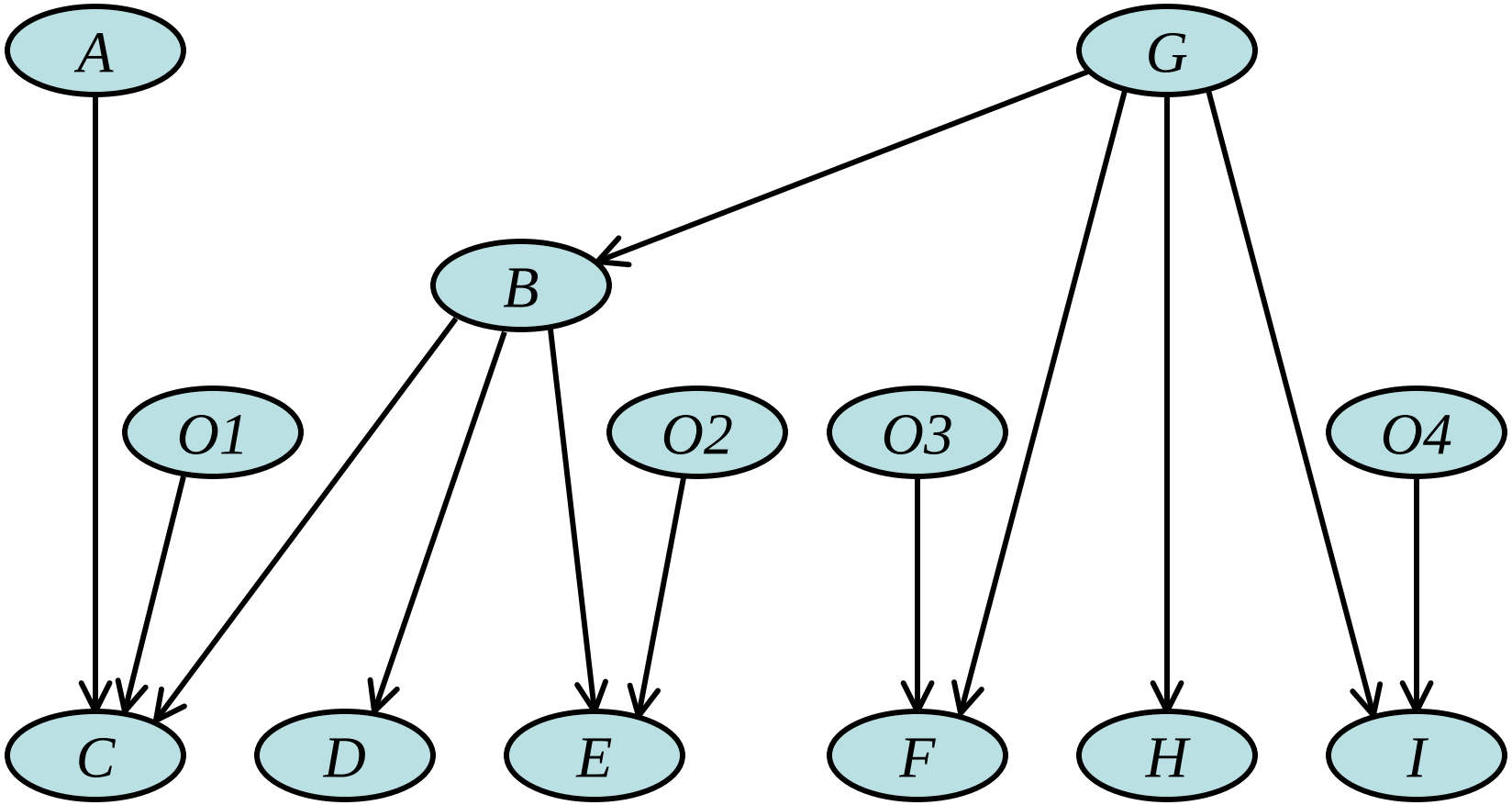
Propositions for Network—3

O_i Alternative explanations for the observations

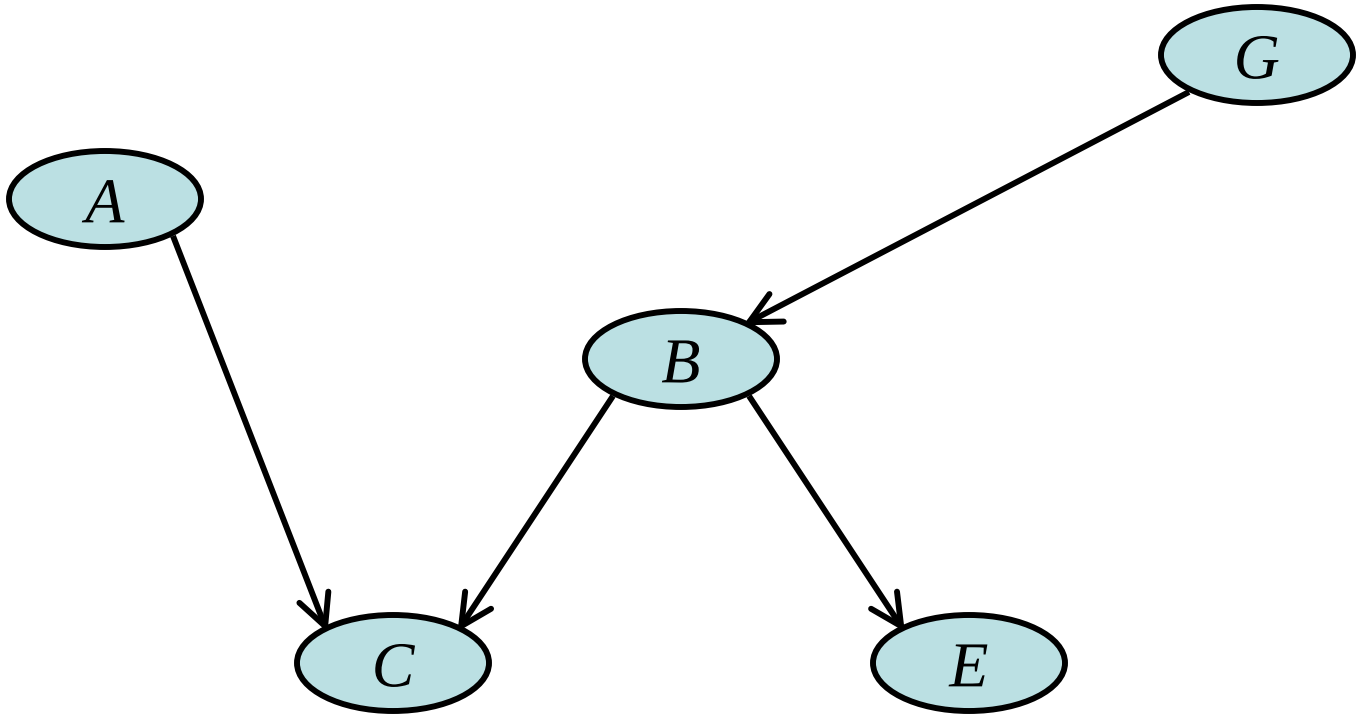
For example

- Error
- Deception
- Conventional Atomic Physics
- Nuclear processes not as above

Bayesian Network



Simplified Bayesian Network



$$P(ABCEG) = P(A)P(G)P(B|G)P(C|AB)P(E|B)$$

Simplified Bayesian Network

Probability Calculation

- $P(ABCEG) = P(A)P(G)P(B|G)P(C|AB)P(E|B)$
- $P(B|CE) = P(BCE)/P(CE)$ — Bayes's theorem
- $P(BCE) = \sum_{a,g} P(A=a, B, C, E, G=g)$
  here a and g range over {true, false}, or if a or g is multi-valued you sum over those values
- $P(CE) = \sum_{a,b,g} P(A=a, B=b, C, E, G=g)$

Simplified Bayesian Network

$P(C|AB)$

A	B	P(C=true)	P(C=false)
true	true	0.9	0.1
true	false	0.1	0.9
false	true	0.1	0.9
false	false	0	1.0

$P(E|B)$

B	P(E=true)	P(E=false)
True	0.8	0.2
False	0.5	0.5

Simplified Bayesian Network

$P(B|G)$

G	(B=true)	P(B=false)
True	0.9	0.1
False	0.5	0.5

$P(A)$

P(A=true)	P(A=false)
0.1	0.9

$P(G)$

P(G=true)	P(G=false)
0.1	0.9

Simplified Bayesian Network

Probability Calculation (Johnson, Khanna, Melich)

$P(BCE) = P(A=t, B, C, E, G=t)$ $0.1\times0.1\times0.9\times0.9\times0.8 = 0.00648$

$+ P(A=f, B, C, E, G=t)$ $0.9\times0.1\times0.9\times0.1\times0.8 = 0.00648$

$+ P(A=t, B, C, E, G=f)$ $0.1\times0.9\times0.5\times0.9\times0.8 = 0.03240$

$+ P(A=f, B, C, E, G=f)$ $0.9\times0.9\times0.5\times0.1\times0.8 = 0.03240$

0.07776

$P(CE) = P(B=t, C, E) + P(B=f, C, E)$

$=$ (above) + (more of the same) $=$

0.08006

$P(B|CE) = P(BCE)/P(CE) = 0.07776 / 0.08006$

$= 0.97127$

What did we compute?

- What we have computed?
- Conditional probability that (B) DD fusion occurs in a lattice, given(C) excess heat is observed without radiation & MeV particles, and (E) MeV protons and Alphas observed in decay of PdD film, and
- Given probability that there (A)exist mechanisms for MeV ==> eV conversion and (G) Coulomb barrier suppression.
- Model Computation: P(B|CE) = 0.97127

ICCF-14
Invitation to Attend

- Put it on your calendar
- Bring your friends
- Put on a world class scientific presentation of CMNS high probability results
- Use this opportunity to let the great majority of the world scientific community know that there are observable effects on nuclear systems of atomic and solid systems.

ICCF-14

- Thank You.
- Questions?