

CETUP* 2013

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PPC 2013

CENTER

**FOR THEORETICAL UNDERGROUND PHYSICS
AND RELATED AREAS**

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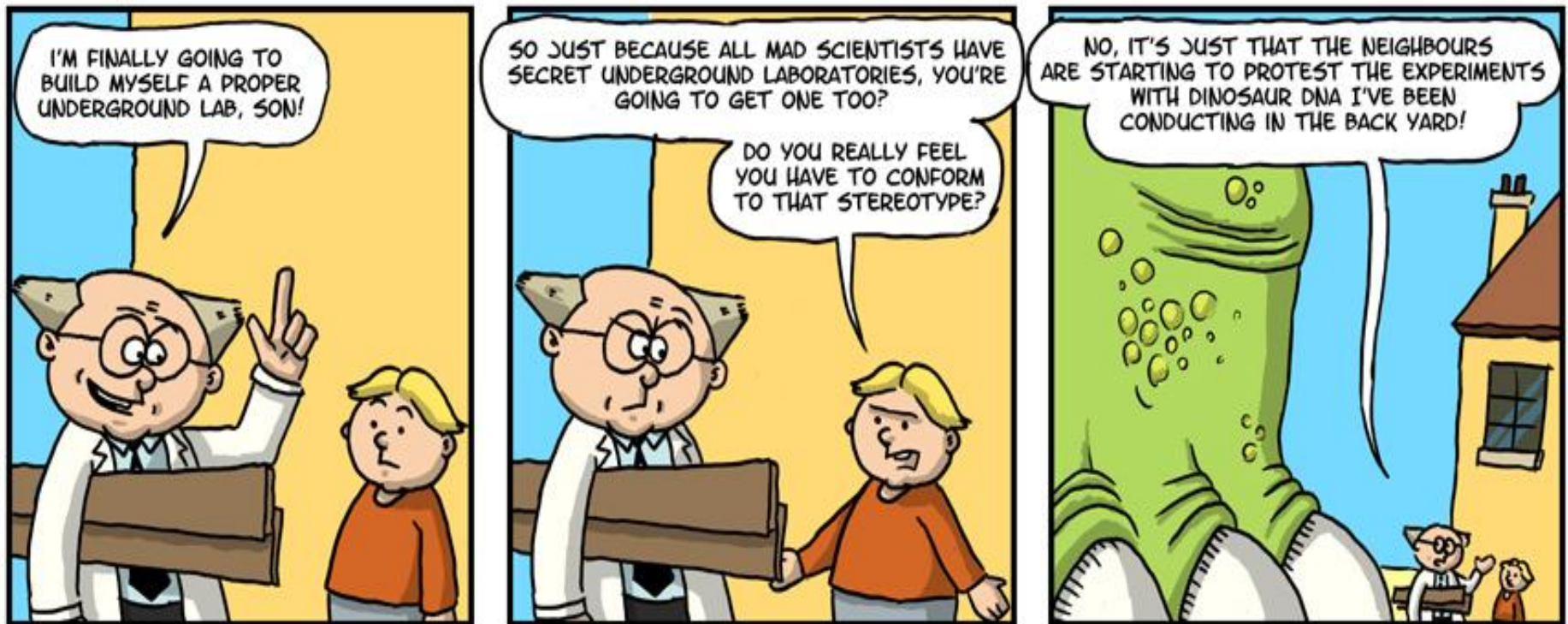
PARTICLE PHYSICS AND COSMOLOGY

Questions in Underground Science

- Over 20 Underground Laboratories around the world working on:
 - Solar and supernova neutrinos
 - Subjects under an umbrella of Long Baseline Neutrino Experiment
 - Nuclear astrophysics
 - Dark matter
 - Proton decay
 - Double beta decay
 - Geo-neutrinos
 - Geo-microbiology
 - Geosciences
 - Others



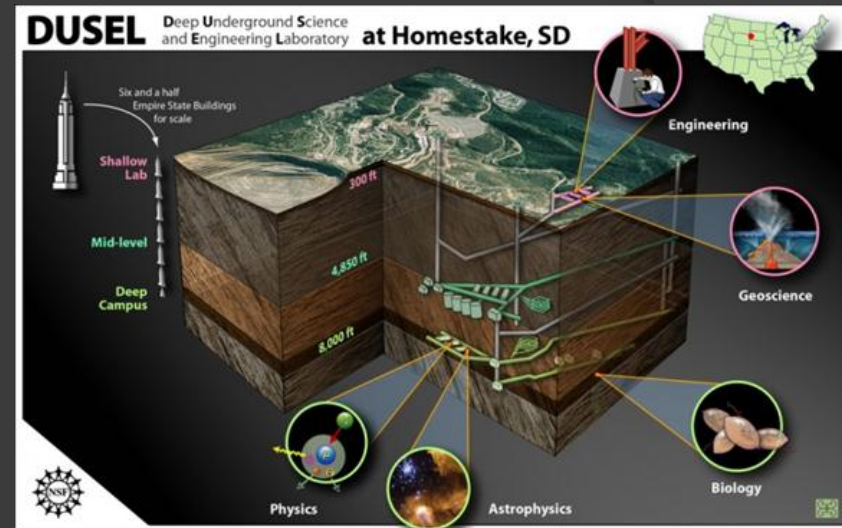
Experimental Approach

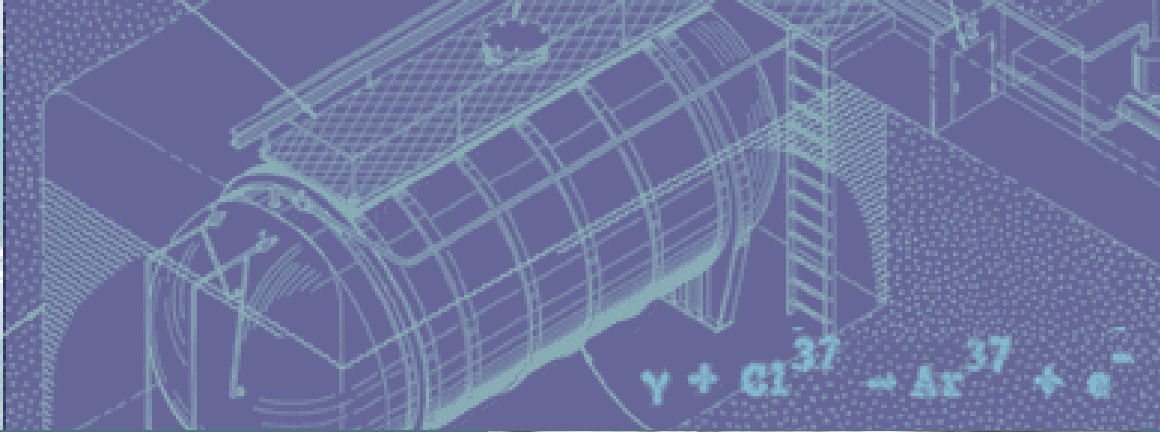


CETUP*

Science Goals

- Bring the best theoretical physicists from around the world
- Provide theoretical support to the underground science to SURF and other underground laboratories
- Create bridge between experimentalists and theorists involved in the underground science
- Provide a stimulating environment for creative thinking and open communication between researches of varying ages and nationalities





Why South Dakota?

Homestake Mine -
home of first neutrino experiment by
Ray Davis & John Bahcall



CETUP* - Strategic Project Goals

Strategic Goal

Establish CETUP* as a place where Theorists and Experimentalists can work in a collaborative manner to pursue the joint scientific goals of SURF and other underground laboratories

- Phase I – June/July 2011 initial CETUP* meeting of top theoretical physicists from around the world. This meeting was critical to the establishment, funding, and success of Phase II
- Phase II – Establish permanent CETUP* project on annual basis for 3-4 years
- Phase III - Development of permanent facilities and infrastructure as well as major management function



CETUP* 2011 Results

- Successful Phase I Summer 2011
 - 35 physicists for 3 week program
 - Successful Scientific Outcomes
 - 6 Scientific Papers resulted from ability to collaborate at CETUP* 2011

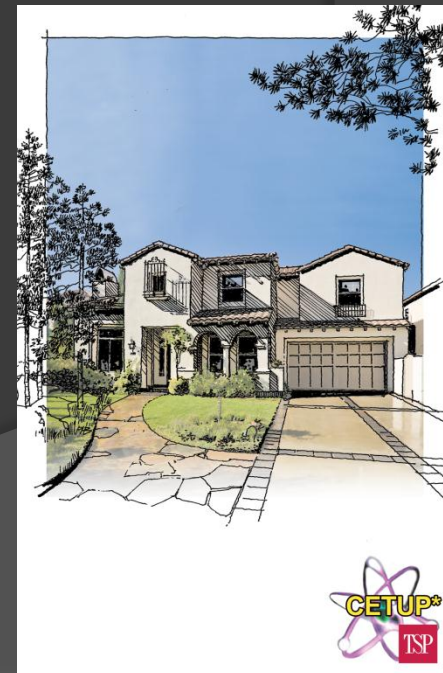
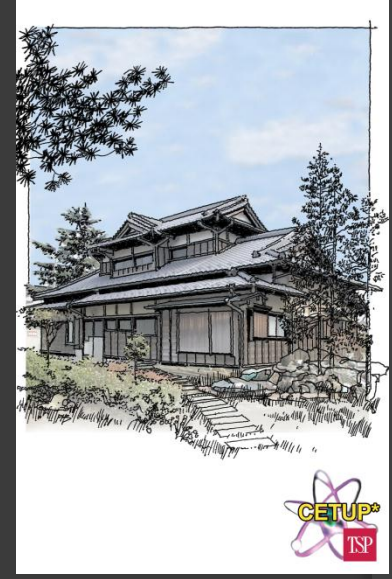
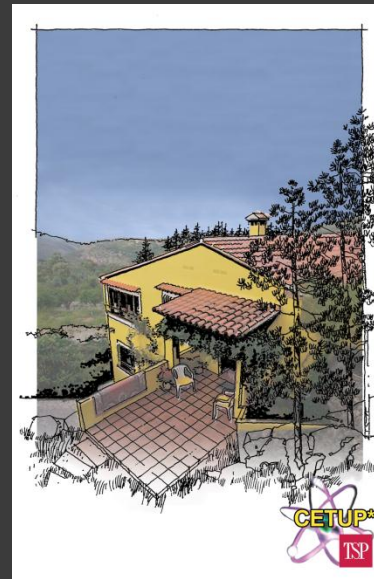
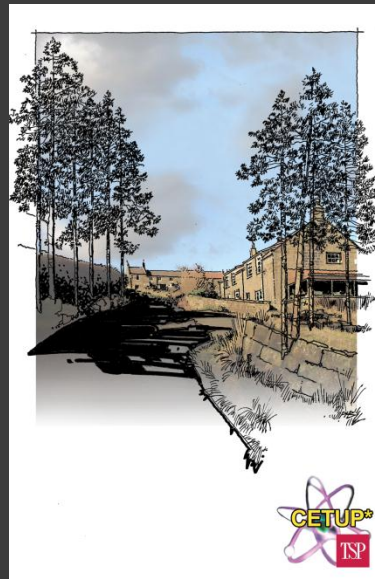
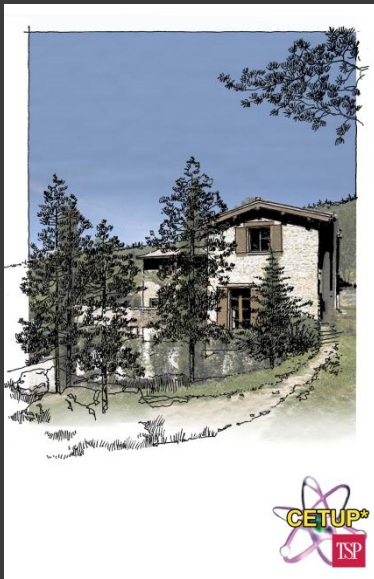


CETUP* 2012 Results

- 60 physicists for 3 week program
- Successful Scientific Outcomes
- 16 Scientific Papers resulted from ability to collaborate at CETUP* 2012
- AIP Proceedings to be published beginning of 2013
- Experience shows that CETUP* is needed long term



Future vision for CETUP*



CETUP*2013 & PPC13

⦿ **Dates**

- June 23 – July 5 – CETUP* Dark Matter session
- July 8-July 12 – PPC13
- July 15 – July 27 – CETUP* Neutrino Physics session

⦿ **Location**

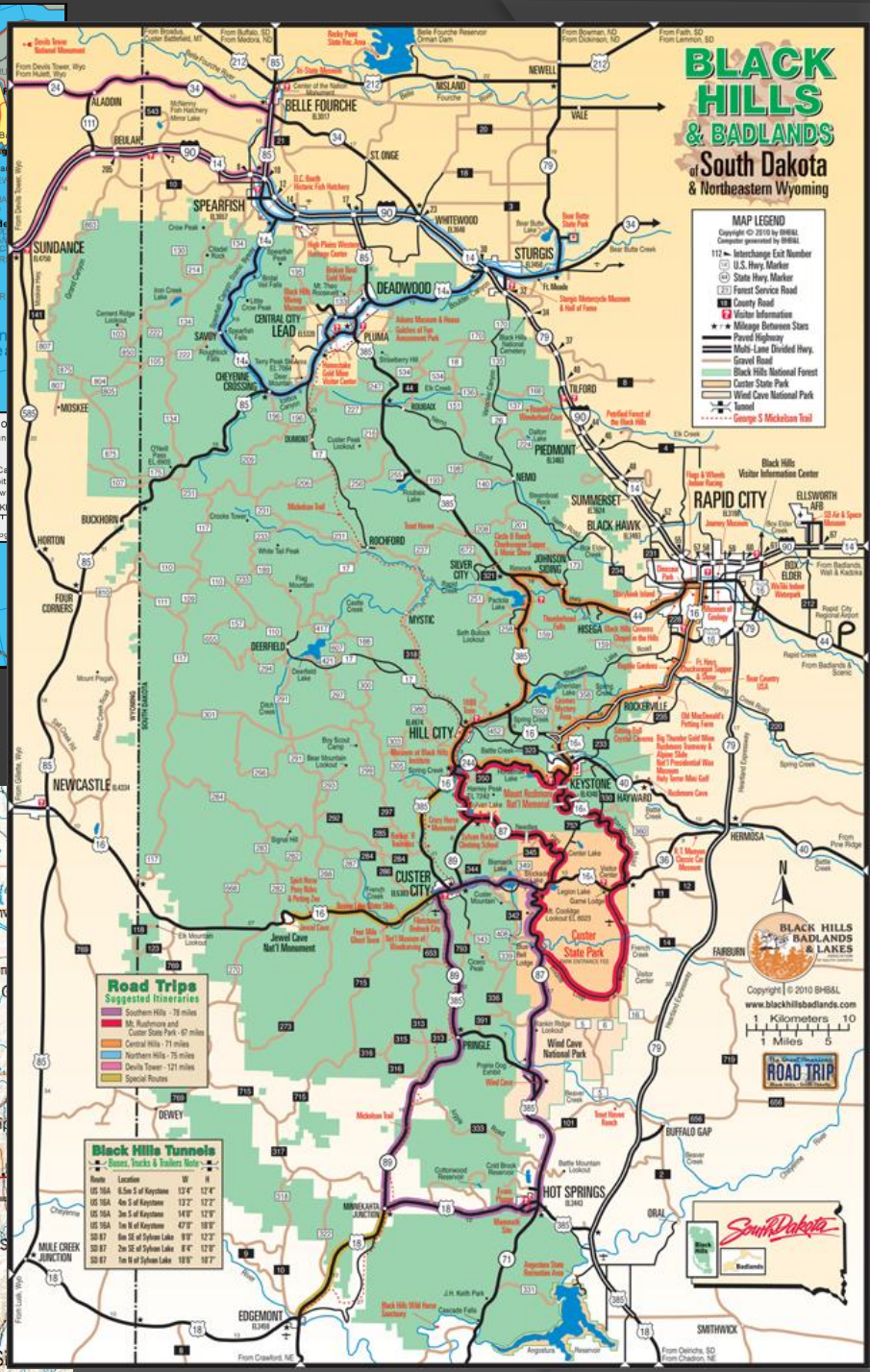
- CETUP* - Lead/Deadwood, SD (close proximity to Homestake site) – office and meeting space
- PPC – Deadwood, SD – meeting space

⦿ **Airport**

- Rapid City, SD – RAP

⦿ **Weather in July**

- 20C – 35C (75F – 90F)



Lodging @Deadwood, SD



Black Hills - South Dakota

