Fermilab
(Funded by DOE HEP)

Technology Transfer:
Technology needed for Particle Physics → Industry
Models and Examples

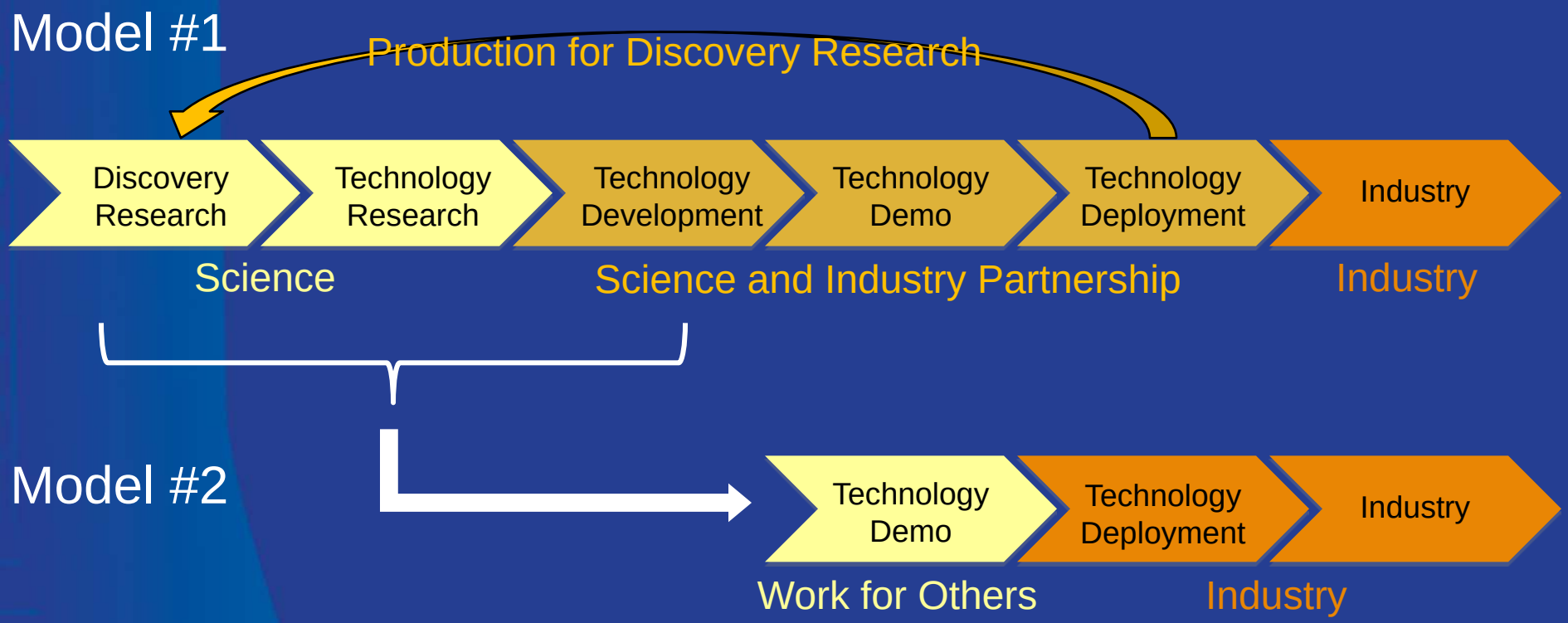
Young-Kee Kim
Deputy Director, Fermilab

SC Laboratory Directors Meeting
Washington D.C., December 8, 2009

U.S. DEPARTMENT OF ENERGY

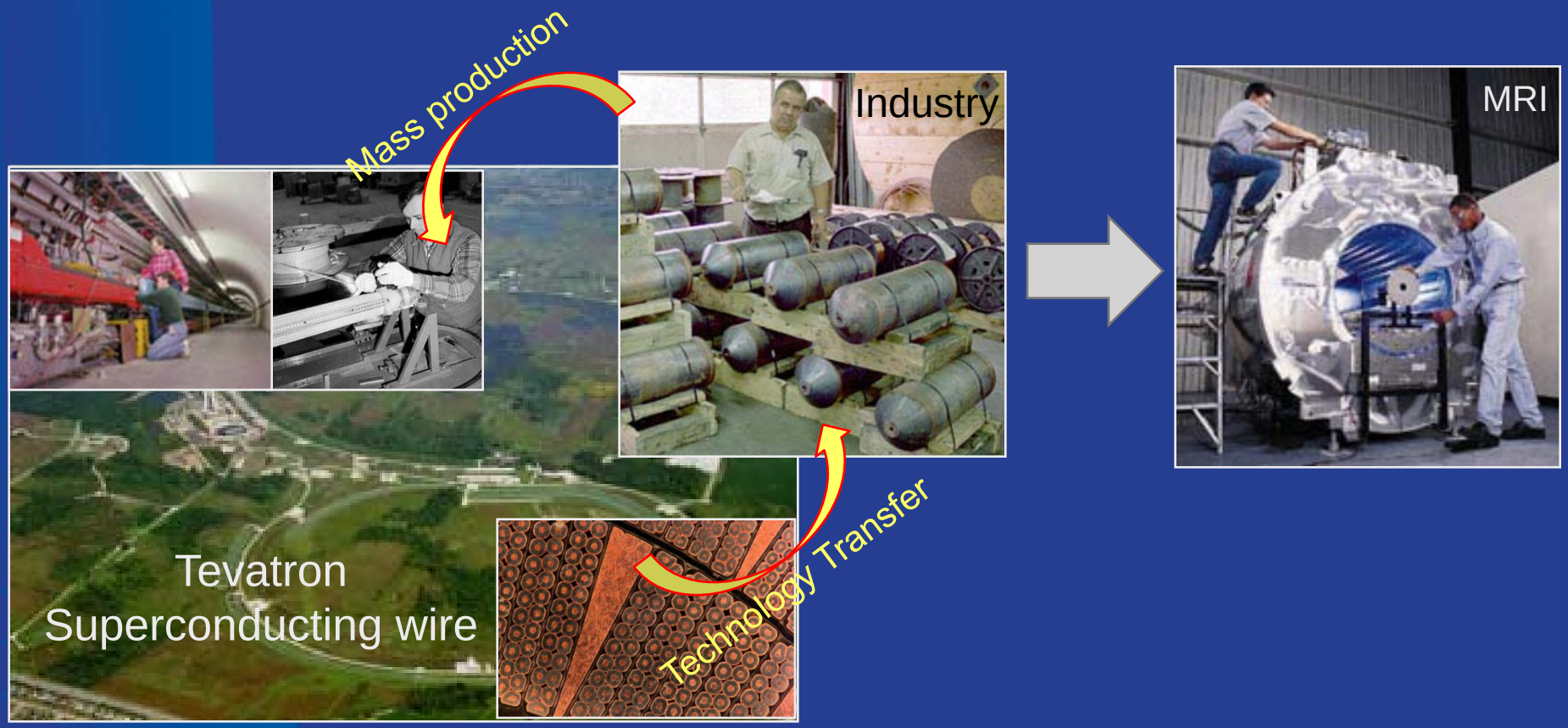
Fermilab

Technology Transfer Models in High Energy Physics



Science and Industry Partnerships (Model #1)

Tevaton superconducting Wire → MRI



"Every program in superconductivity that there is today owes itself in some measure to the fact that Fermilab built the Tevatron and it worked."
Robert Marsh, of ATI Wah Chang, world's largest supplier of superconducting alloys.

Science and Industry Partnerships (Model #1)

Superconducting RF R&D Program

Industry (AES)

Production

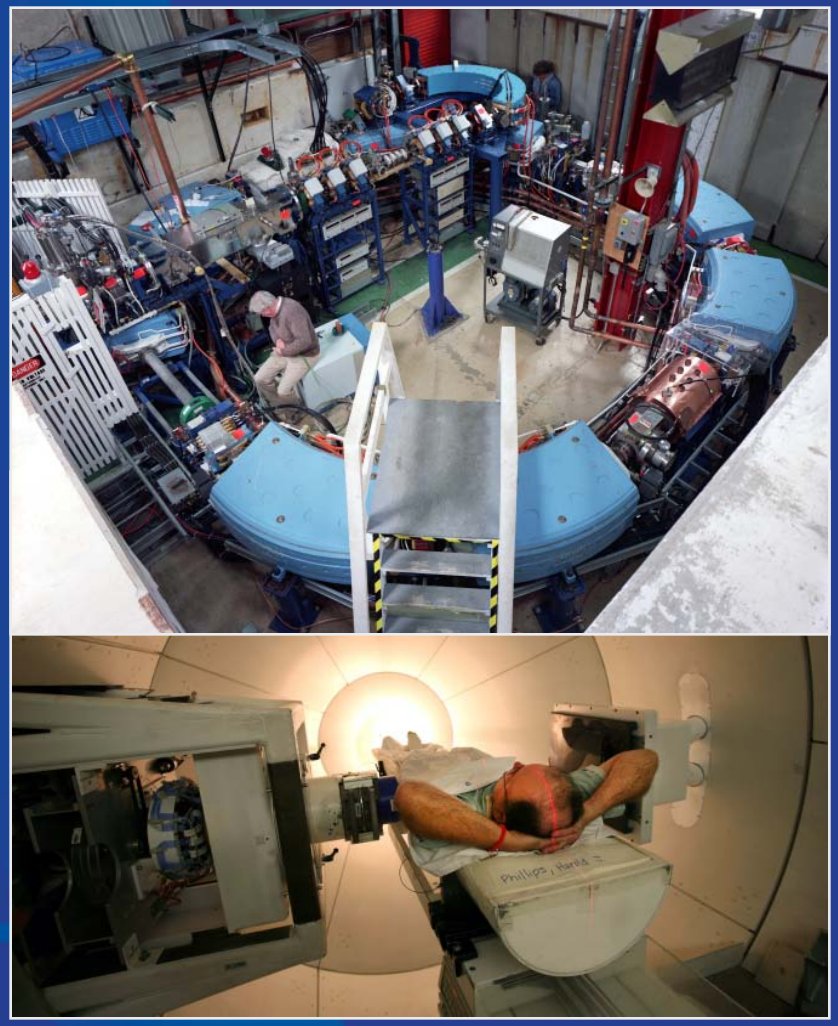
Technology Transfer (JLab, Fermilab,…)

To be determined

Potential mass production for Project X, ILC, Muon Collider, …

Science and Industry Partnerships (Model #2)

Proton Cancer Therapy



Proton synchrotron accelerator designed and built at Fermilab for

Loma Linda Proton Therapy and Treatment Center

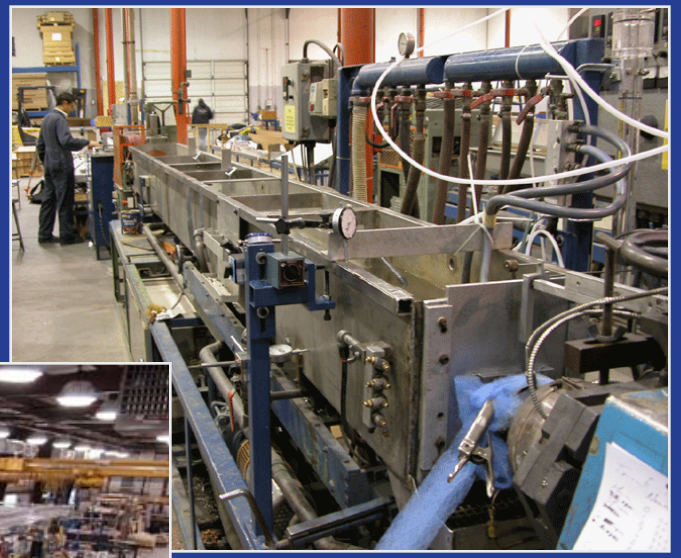
(world's 1st proton accel. built specifically for proton therapy)

Technology Demonstration → Industry

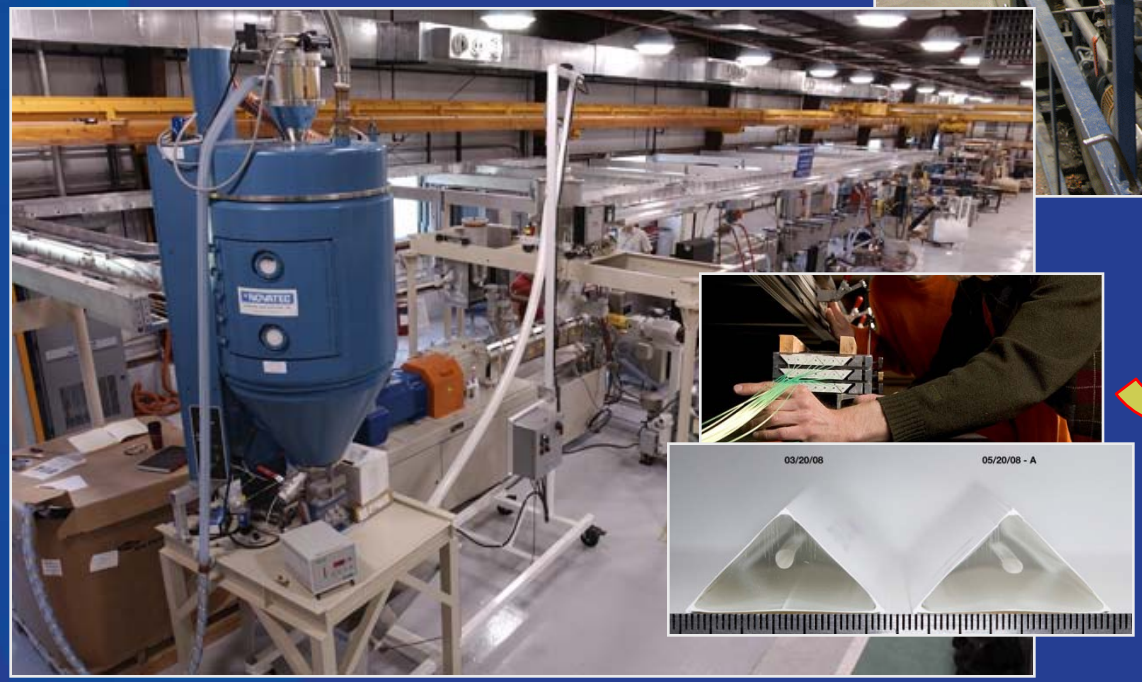
Science and Industry Partnerships (Model #2)

Plastic Scintillator Co-Extrusion (Scintillator + Reflector)

Industry
(CELCHO)



Plastic Scintillator
Extrusion Line at Fermilab

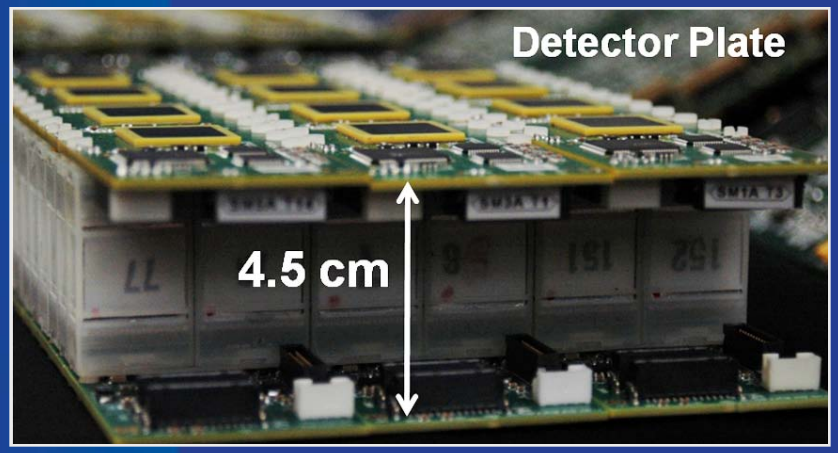


Technology Transfer

Patent No.:
US 6,218,670 (2001)

Science and Industry Partnerships (Model #2)

Particle Detector (photon detector) → PET and PEM



Positron-Emission Mammogram

compact module developed by CMS collaboration

(crystals & electronics)

Technology Demonstration → Industry

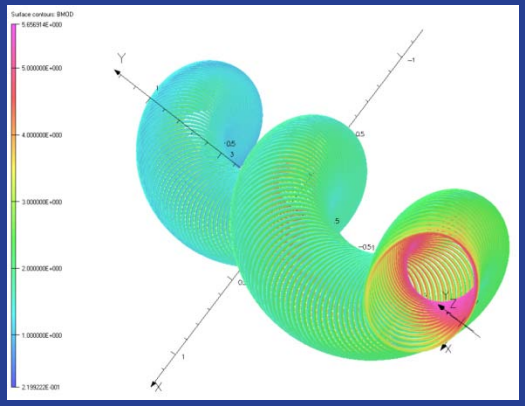
Science and Industry Partnerships (Model #3)

U.S. Congressman

Science and Industry Partnerships (Model #3)

Lab scientists creating small business

Muons, Inc.



epicyclic helical solenoid cooling scheme

Formed in 2002 to participate in Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs which fund research on muon beam cooling and on applications such as neutrino factories, muon colliders, and stopping muon beams.

Carries out innovative scientific research on topics of national and global interest, including development, design, and implementation.

Advancing Partnerships between Science and Industry

"The Symposium on Accelerators for America's Future" brought together more than 400 scientists who examined the challenges for identifying, developing and deploying accelerators to meet the nation's needs in basic science, medicine, energy and the environment, national security, and industry.

Sponsored by

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