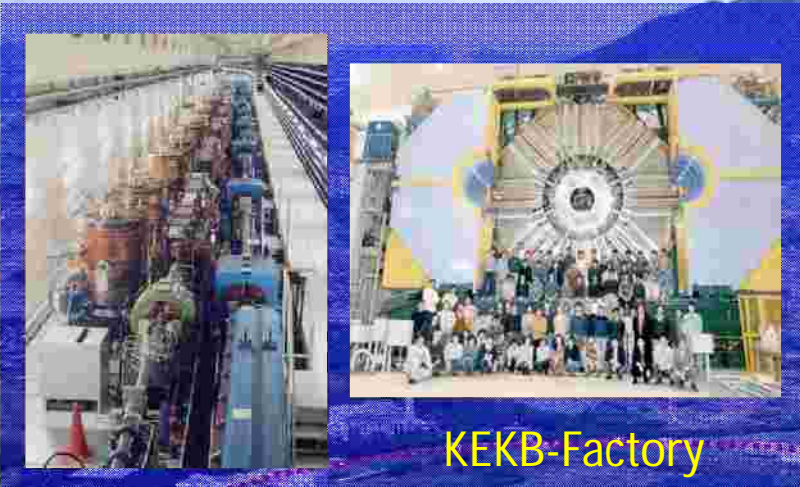


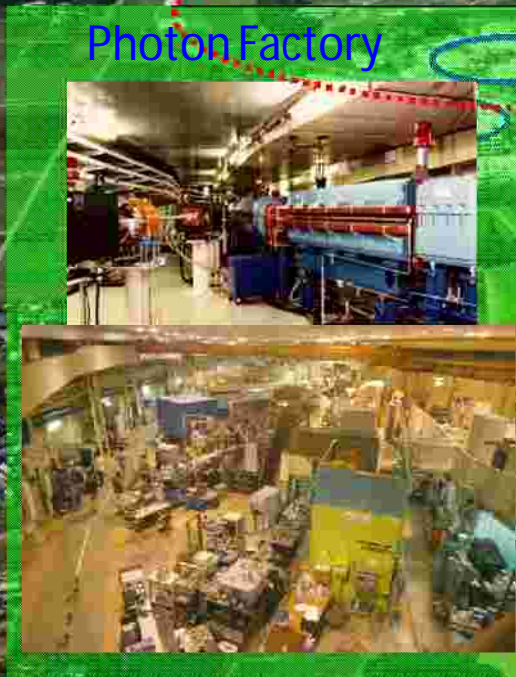
KEK Current Core Activities



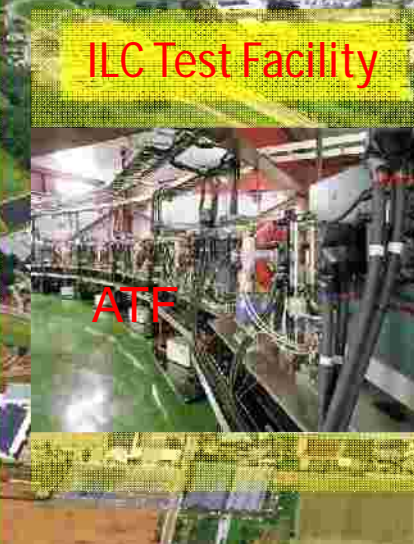
J-PARC in Tokai



KEKB-Factory

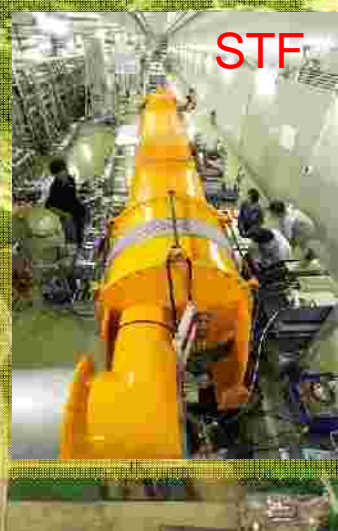


Photon Factory



ILC Test Facility

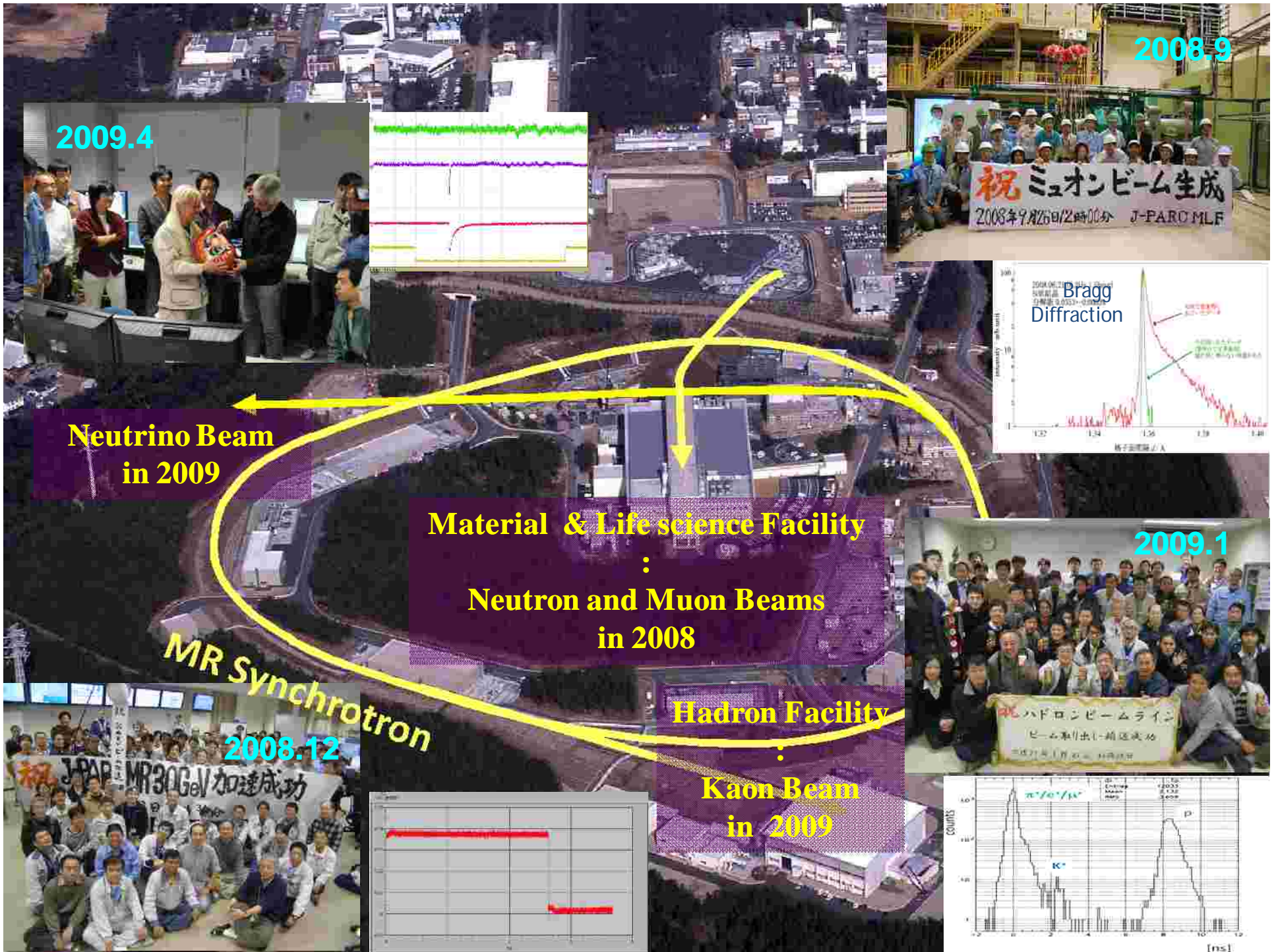
ATF



STF



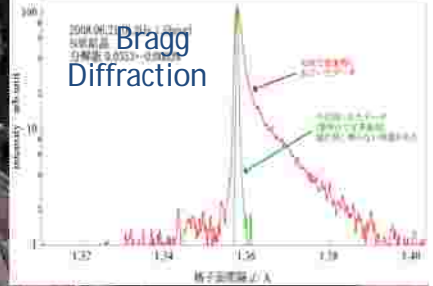
LHC at CERN



2008.9

2009.4

祝 ミュオンビーム生成
2008年9月26日12時00分 J-PARC MLF



Neutrino Beam
in 2009

Material & Life science Facility
:
Neutron and Muon Beams
in 2008

MR Synchrotron

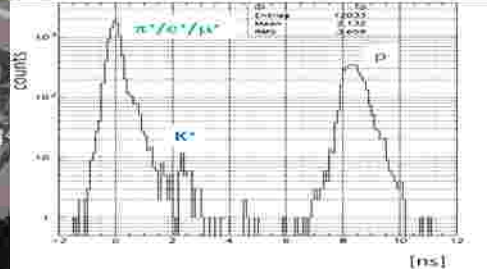
Hadron Facility
:
Kaon Beam
in 2009

2009.1

祝 ハドロンビームライン
ビーム取り出し開始式
平成21年1月21日 午後1時



2008.12



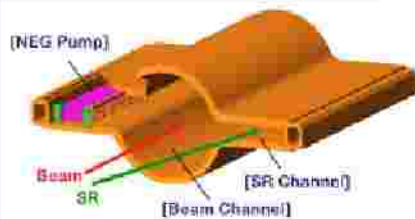
From KEKB to SuperKEKB



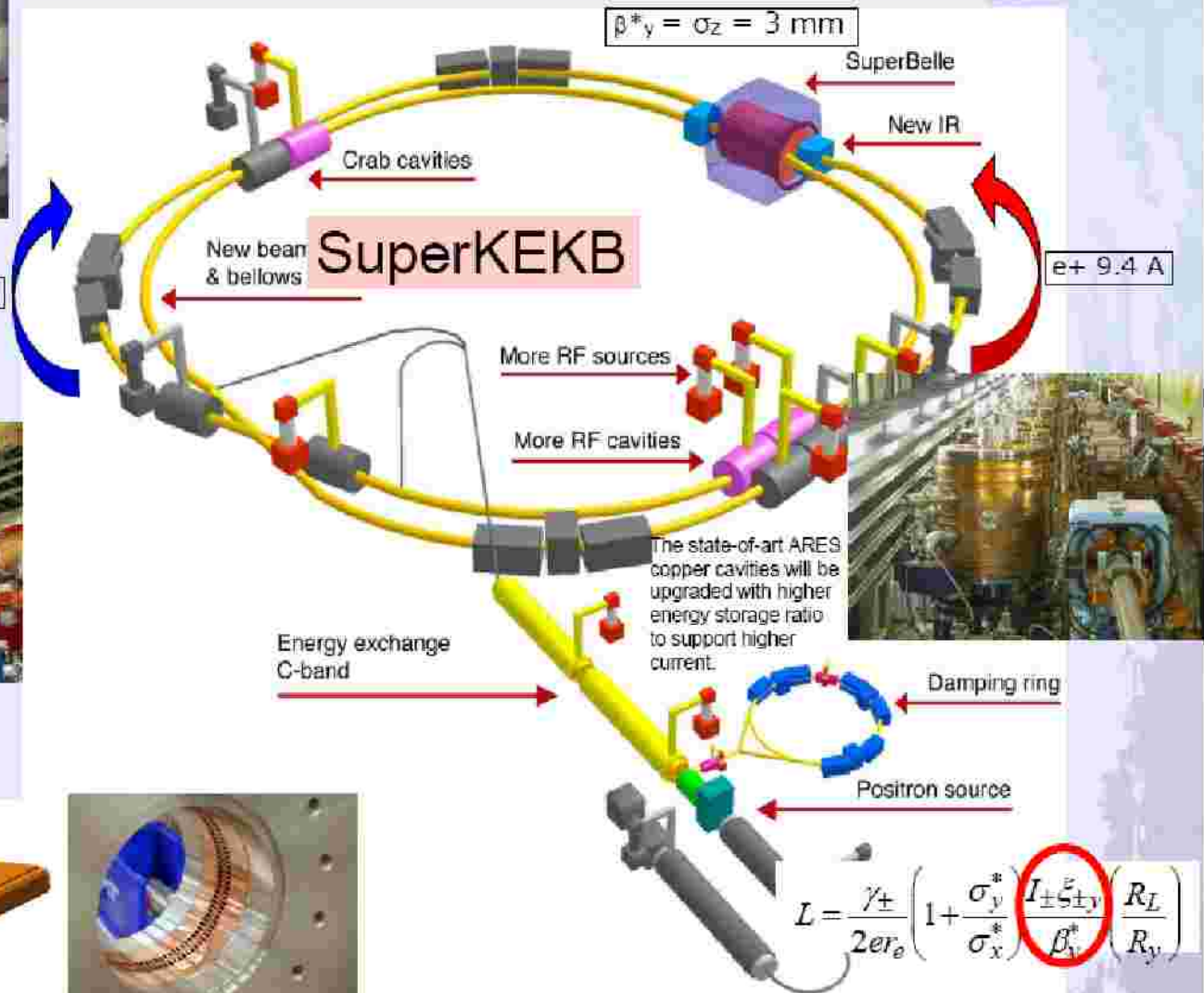
Crab cavities installed and undergoing testing in beam $e^- 4.1 \text{ A}$



The superconducting cavities will be upgraded to absorb more higher-order mode power up to 50 kW.



The beam pipes and all vacuum components will be replaced with higher-current design.



will reach $8 \times 10^{35} \text{ cm}^{-2}\text{s}^{-1}$.

Design Options

Comparison of parameters

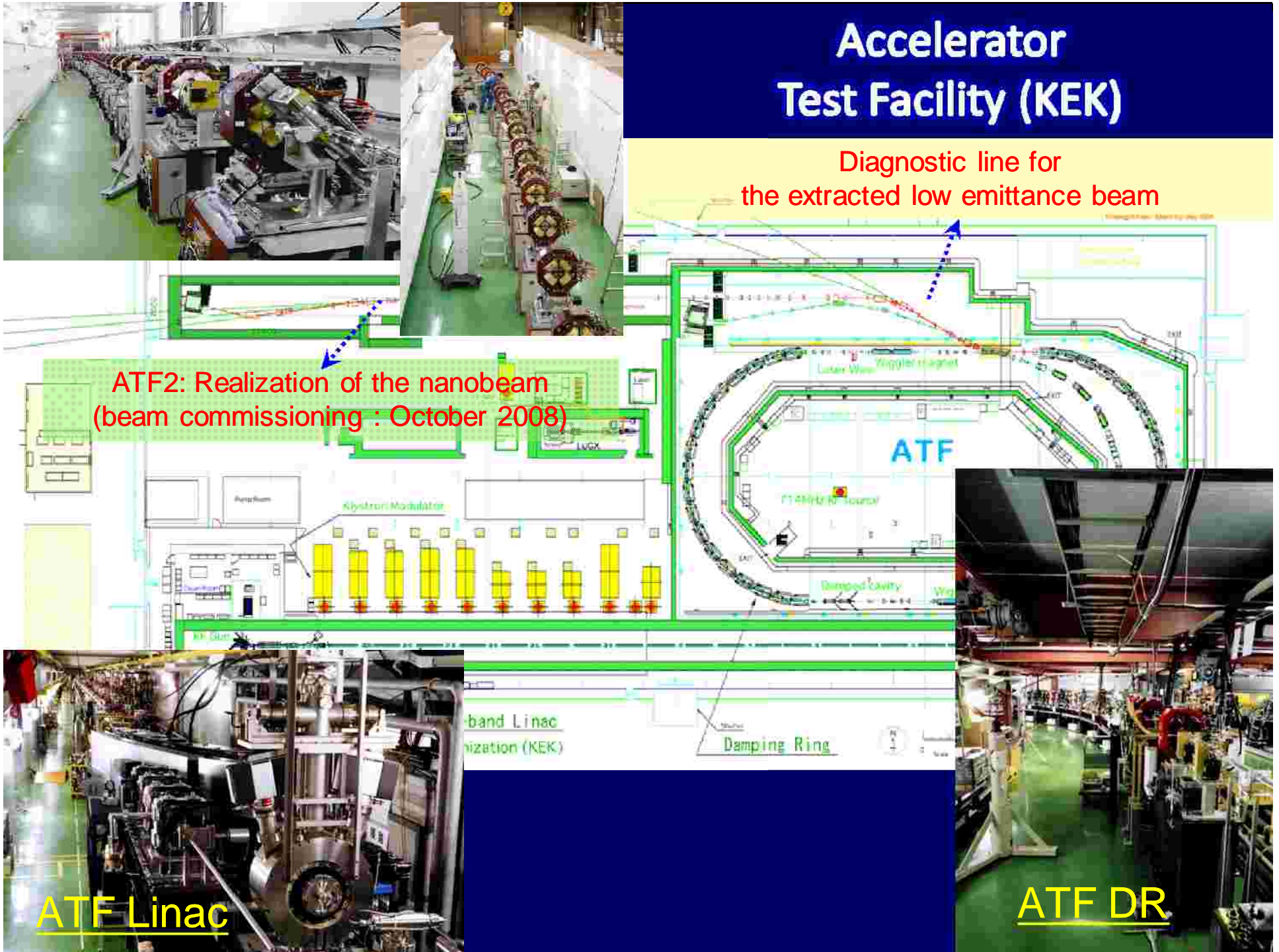
	KEKB Design	KEKB Achieved (): with crab	SuperKEKB High-Current Option	SuperKEKB Nano-Beam Option
β_y^* (mm)(LER/HER)	10/10	6.5/5.9 (5.9/5.9)	3/6	0.22/0.22
ϵ_x (nm)	18/18	18(15)/24	24/18	1/1
σ_y (μm)	1.9	1.1	0.85/0.73	0.034/0.044
ξ_y	0.052	0.108/0.056 (0.101/0.096)	0.3/0.51	0.07/0.07
σ_z (mm)	4	~ 7	5(LER)/3(HER)	6
I_{beam} (A)	2.6/1.1	1.8/1.45 (1.62/0.95)	9.4/4.1	2.96/1.70
N_{bunches}	5000	~1500	5000	2500
Luminosity ($10^{34} \text{ cm}^{-2} \text{ s}^{-1}$)	1	1.96	53	80

High Current Option includes crab crossing and travelling focus.
 Nano-Beam Option does not include crab waist.

Accelerator Test Facility (KEK)

Diagnostic line for the extracted low emittance beam

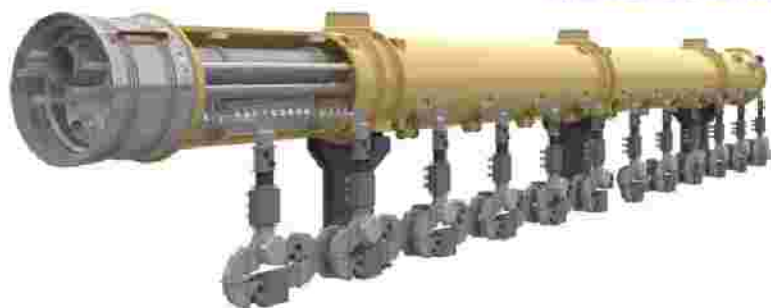
ATF2: Realization of the nanobeam
(beam commissioning : October 2008)

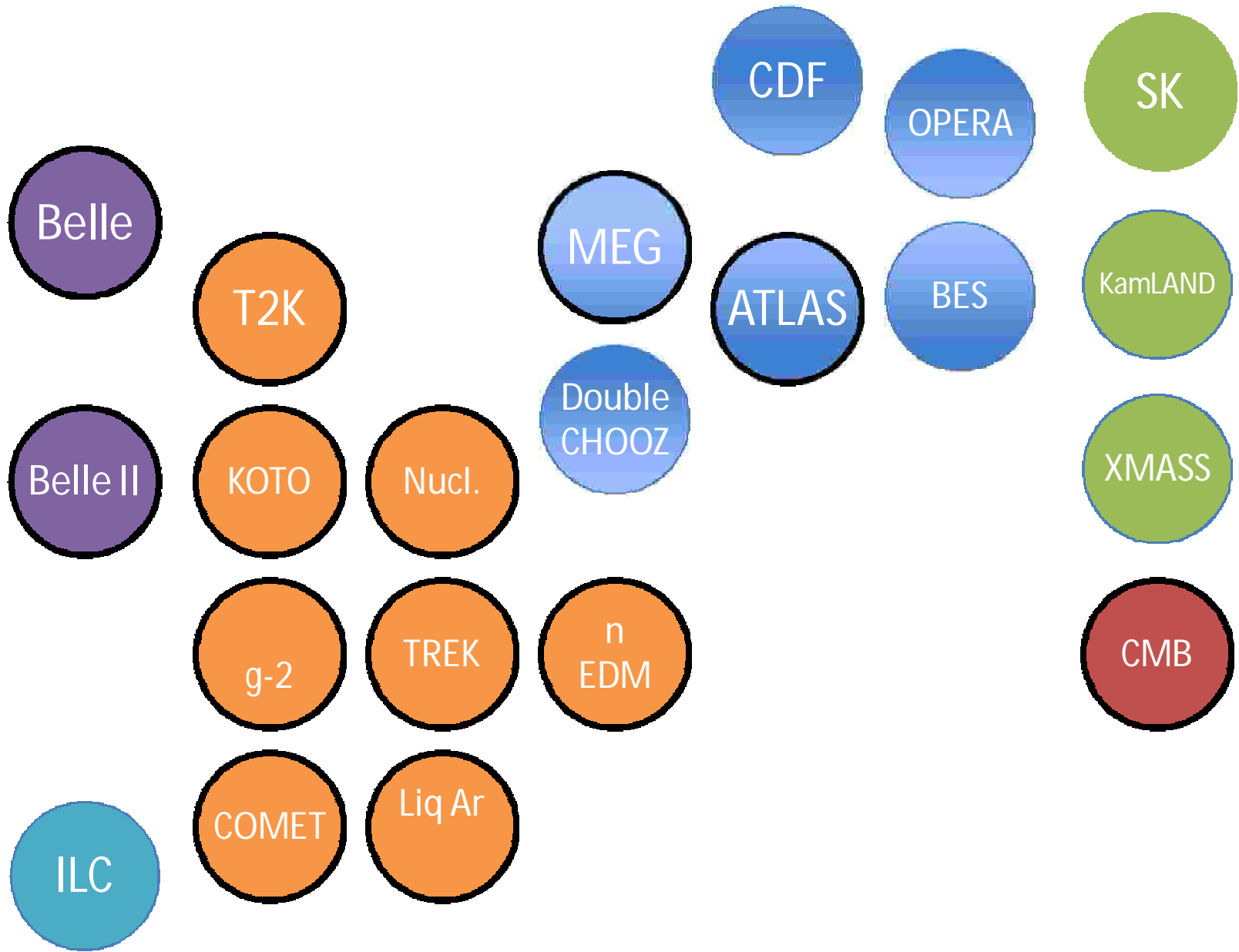


ATF Linac

ATF DR

Superconducting Accelerator Test Facility (KEK)





MPGD : Detection of elementary particles by fine holes

MPPC : Compound-eye sensor made of semiconductors

STJ : Superconducting tunnel junction device

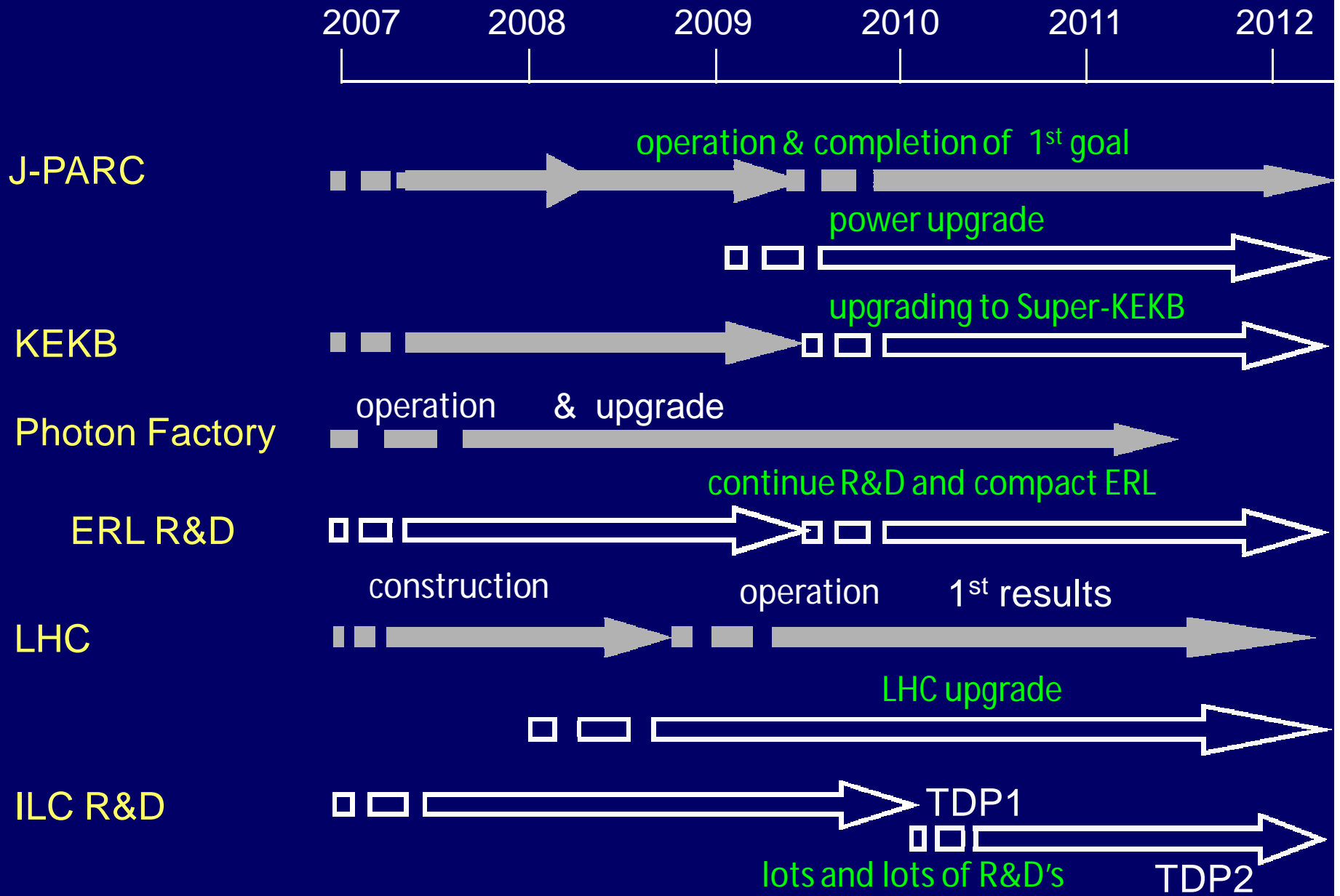
LiXe : Superconduction detector project

SOI : Ultimate detector by SOI technology

ASIC : ASIC development project

DAQ : High-speed data collection by network

Summary of KEK Roadmap



Quest for Birth-Evolution of Universe

International Linear Collider (ILC)

Quest for Unifying Matter and Force

Lepton CP Asymmetry

Power-Upgrade

J-PARC

Scientific Activities
Technology Innovation
Encouraging Human Resources

Beyond Standard Physics

Super-KEKB

KEK-B

LHC

Quark CP Asymmetry

[Origin of Matter]

Quest for Neutrinos

Quest for 6 Quarks

[Origin of Force]

Higgs Particle [Origin of Mass]

