



Welcome to the ERL workshop 2022

Georg Hoffstaetter, Dejan Trbojevic, Steve Benson



Cornell Laboratory for
Accelerator-based Sciences and
Education (CLASSE)

BROOKHAVEN
NATIONAL LABORATORY
a passion for discovery





ERL workshops



- [ERL'19 - Helmholtz-Zentrum Berlin Germany](#)
 - [ERL'17 - CERN, Geneva, Switzerland](#)
 - [ERL'15 - Brookhaven National Lab, New York, USA](#)
 - [ERL' 13 - Novosibirsk, Russia](#)
 - [ERL'11 - KEK, High Energy Accelerator Research Organization, Tsukuba, Ibaraki, Japan](#)
 - [ERL'09 - Cornell University Ithaca, NY USA](#)
 - [ERL'07 - Daresbury, UK](#)
 - [ERL'05 - Jefferson Lab Newport News, VA, USA](#)
(2001 Cornell ERL prototype workshop)
- + There is a proposal for ERL'21



IOC

- Georg Hoffstaetter (Chair, also SPC and LOC)
- Dejan Trbojevic (co-Chair, also SPC)
- Stephen Benson (co-Chair, SPC Chair)
- Florian Hug
- Jens Knobloch
- Matthias Ulf Liepe (also SPC, conv. SRF)
- Oliver Bruning
- Andrei Seryi
- Atoosa Meseck
- Deepa Angal-Kalinin
- Max Klein (also SPC)
- Norbert Pietralla
- Ryoichi Hajima
- Thomas Roser
- Tsukasa Miyajima (also SPC, conv Facilities)

LOC

- Karl Smolenski
- Annabelle Petway
- Katerina Malysheva
- Monica Wesely

Georg.Hoffstaetter@Cornell.edu

Lab support

- Don Hartill
- Wolfram Fischer
- Stuart Henderson

ERL workshop

SPC

- Alex Bogacz (conv. Beam Dynamics)
- Dmitry Kayran
- Erdong Wang (conv. Applications)
- Hiroshi Sakai
- Jared Maxson
- Luca Cultrera (conv. Sources)
- Meghan McAteer
- Michaela Arnold (conv. Facilities)
- Nilanjan Banerjee
- Peter McIntosh
- Peter Williams (conv. Applications)
- Scott Berg
- Vladimir Litvinenko
- Walid Kaabi
- Alexandr Matveenko (ERL19 Chair)
- Achille Stocchi
- Andre Arnold
- Axel Neumann
- Kurt Aulenbacher
- Pavel Evtushenko

Ithaca / NY / USA

02 October 2022

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Welcome to Ithaca



Enjoy Cornell



And more than Cornell

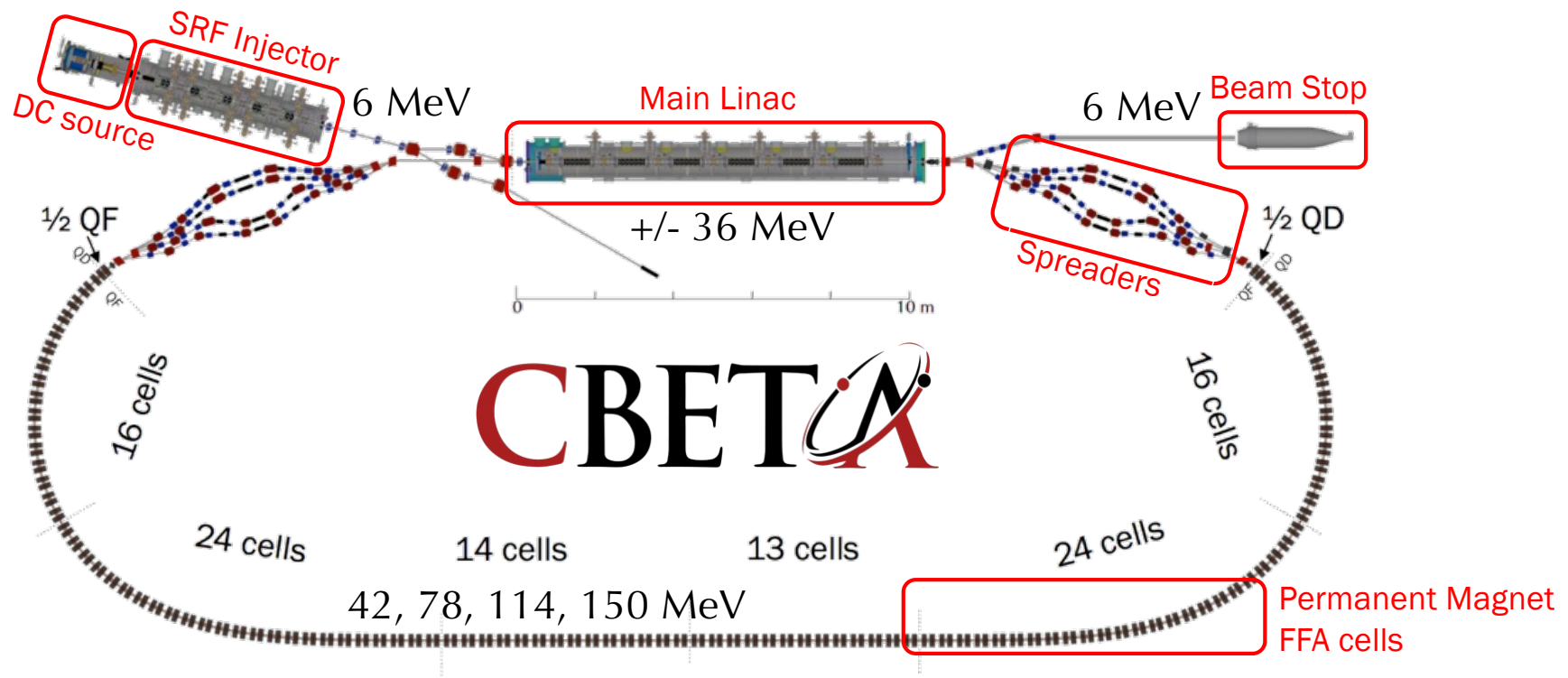
- Lake
- Waterfalls
- Wines
- etc.



- Bus pickup every morning at 7:30 Hilton Garden Inn, 7:40 Hotel Ithaca, rudimentary breakfast at 8:00.
- Lunch provided each day including Thursday (send away with lunch package)
- No bus back to Hotels on Thursday
- Welcome reception at Hilton Garden Inn Monday 6pm-8pm - Please join / drinks / snacks
- New at ERL22 - Corporate sponsors: KYMA, iFast, Tech-X Corporation, RadiaSoft, Xelera Research. They will present their companies during the sponsor lunch. Their contributions will be highlighted.
- Wednesday hiking and BBQ with open bar at Treman State park. (2.1 miles / 3.4 km downhill – join if you feel like moving, use good shoes) Comfortable shoes, NOT dress shoes is essential. Transportation there and back by bus.
- Cornell Staff should drive to Treman State Park themselves to the park due to the limited space on the bus. Please give rides to colleagues.
- In case of a fire, please use the stairway to the left of the elevator.
- Cornell Wifi should be available to visitors either through EduRoam / Cornell-Visitor / RedRover
- Monday tour of the CBETA facility at Wilson lab, 10 min walk from Clark 700. Tour guides with lots of experience: Peter, Colwyn, Adam, Stephen, Yulin, Nilanjan, Georg, Dave.
- Satellite meetings: Bmad developer's workshop (Thursday), Bmad School (Friday – Sunday)

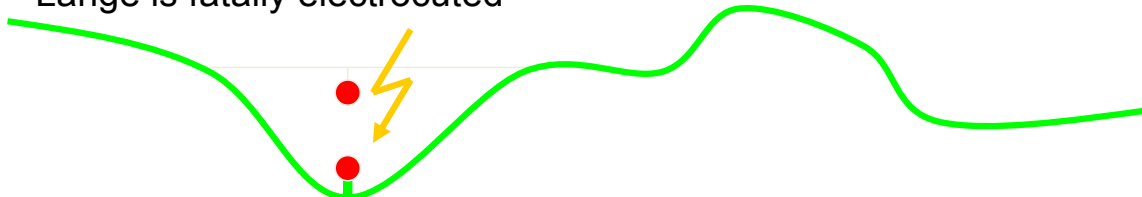


The Cornell-BNL ERL Test Accelerator – the first multi turn SRF ERL





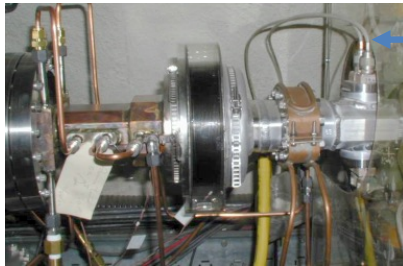
- 1932: Brasch and Lange use potential from lightening, in the Swiss Alps, Lange is fatally electrocuted



- 1934: Livingston builds the first Cyclotron away from Berkely (2MeV protons) at Cornell (in room B54)
- 1949: Wilson et al. at Cornell are first to store beam in a synchtotron (later 300MeV, magnet of 80 Tons)
- 1954: Wilson et al. build first synchrotron with strong focusing for 1.1MeV electrons at Cornell, 4cm beam pipe height, only 16 Tons of magnets.
- 1979: 5GeV electron positron collider CESR (designed for 8GeV)
- Currently:
CESR operation and optimization for CHES
CBETA – first 4-turn SRF ERL
Research in SRF, e-sources, and UED



Boyes McDaniel with Cyclotron

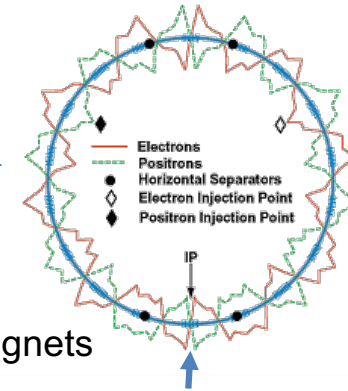


1979: **First** impedance controller storage ring



1983: **First** multiple-bunch collisions (Pretzel orbits)

1986: **First** "Micro-beta" collision point with permanent magnets



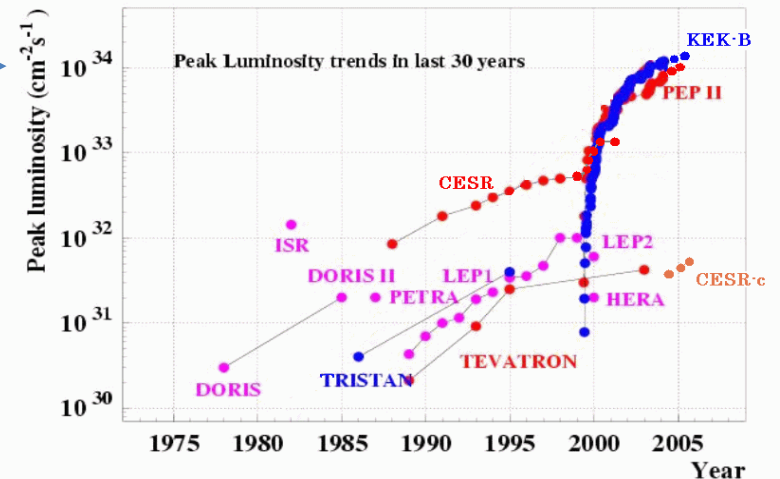
1994: **First** crossing angle

1990-2000: **Highest** luminosity collider

2000: **First** SRF only ring

2003: **First** wiggler dominated collider

2020: **First** multi-turn SRF ERL



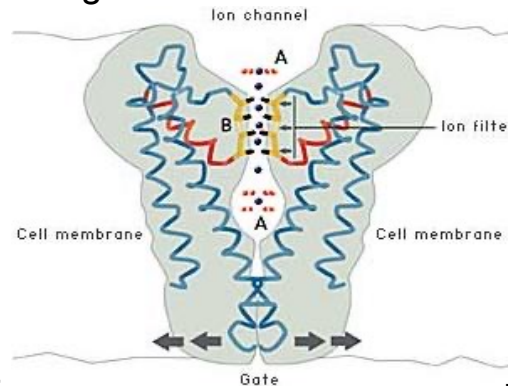


- 1947: 1st detection of synchrotron light at General Electrics. Soon advised by D.H.Tomboulia (Cornell University)
- 1952: 1st accurate measurement of synchrotron radiation power by Dale Corson with the Cornell 300MeV synchrotron.
- 1953: 1st measurement of the synchrotron radiation spectrum by Paul Hartman with the Cornell 300MeV synchrotron.
- Worlds 1st synchrotron radiation beam line (Cornell 230MeV synch.)
- 1961: 1st measurement of radiation polarization by Peter Joos with the Cornell 1.1GeV synchrotron.
- 2003: 1st Nobel prize with CESR data goes to R.MacKinnon



Dale Corson
Cornell's 8th president

Georg.Hoffstaetter@Cornell.edu



ERL workshop



Roderick MacKinnon

Brookhaven National Laboratory
Ithaca / NY / USA
cornell.edu



Have a fruitful week at ERL 2022 !

Enjoy Ithaca & Cornell

Enjoy being in-person again (and stay Covid – safe)