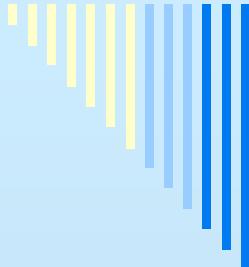


A series of vertical bars of varying heights and colors (yellow, light blue, dark blue) are positioned on the left side of the slide, decreasing in height from left to right.

*Experimental Evidence for
Particle Acceleration by
Stimulated Emission of Radiation*

Levi Schächter



Collaboration and Acknowledgments

Collaboration:

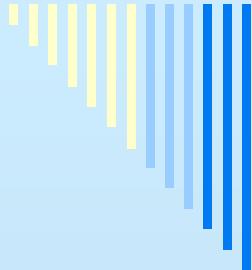
- Samer Banna (Technion – IIT)
- Valery Berezovsky (Technion – IIT)

Acknowledgments:

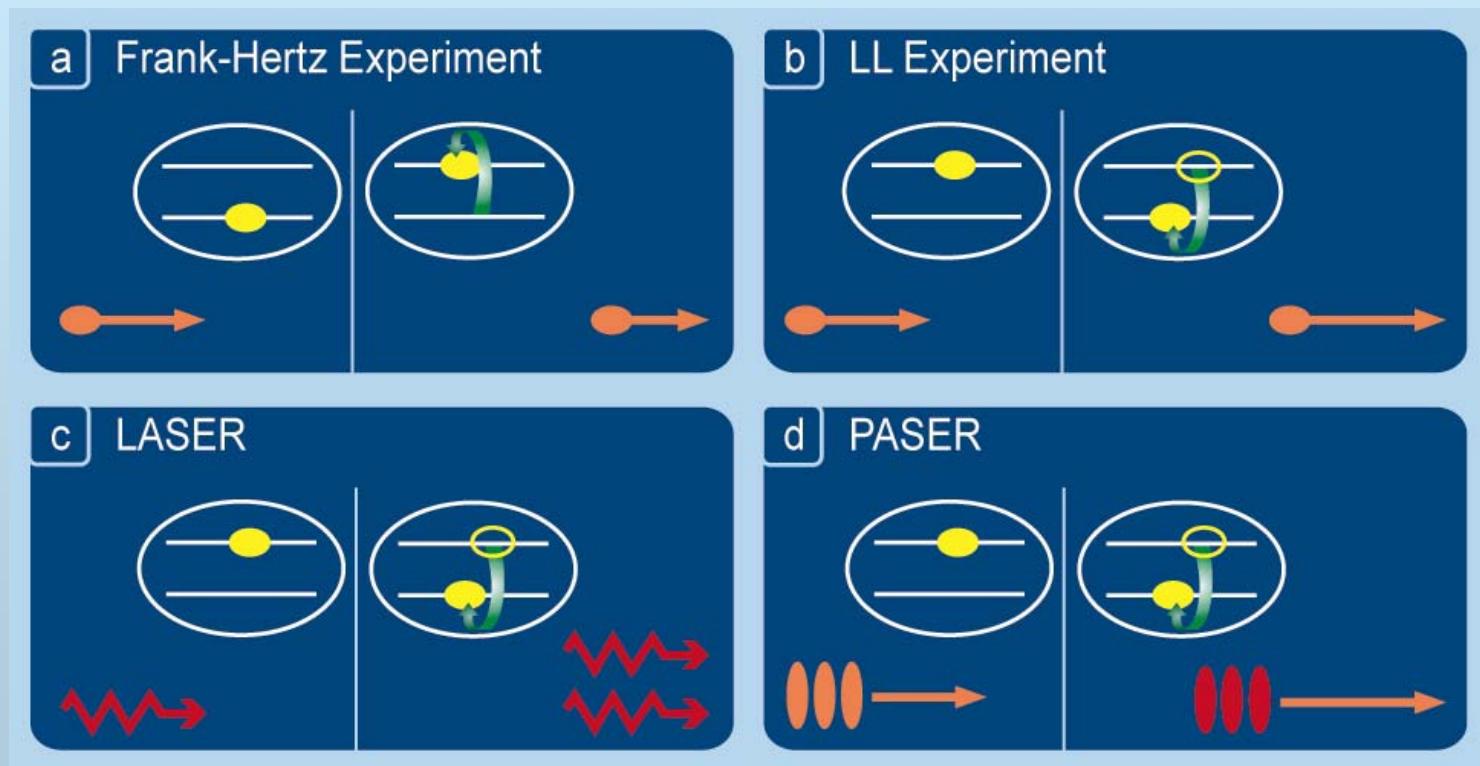
- Ilan Ben Zvi
- Staff of ATF-BNL
- Wayne Kimura (STI Optronics)
- Feng Zhou (SLAC)

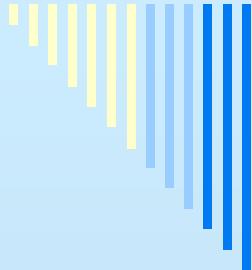
Supported by:

- The Israel Science Foundation (ISF)
- The United States Department of Energy (DoE)

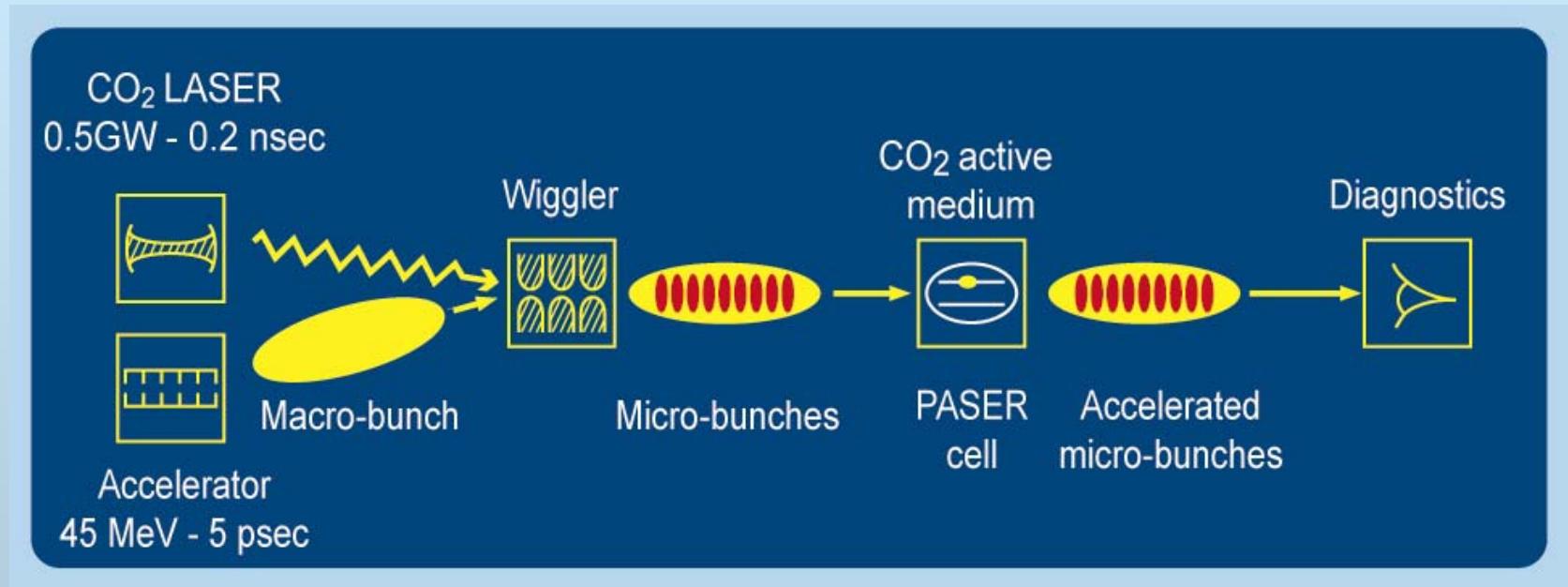


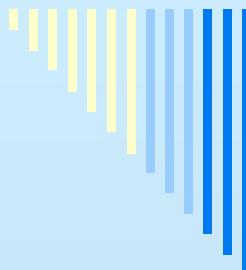
Essence of the PASER scheme



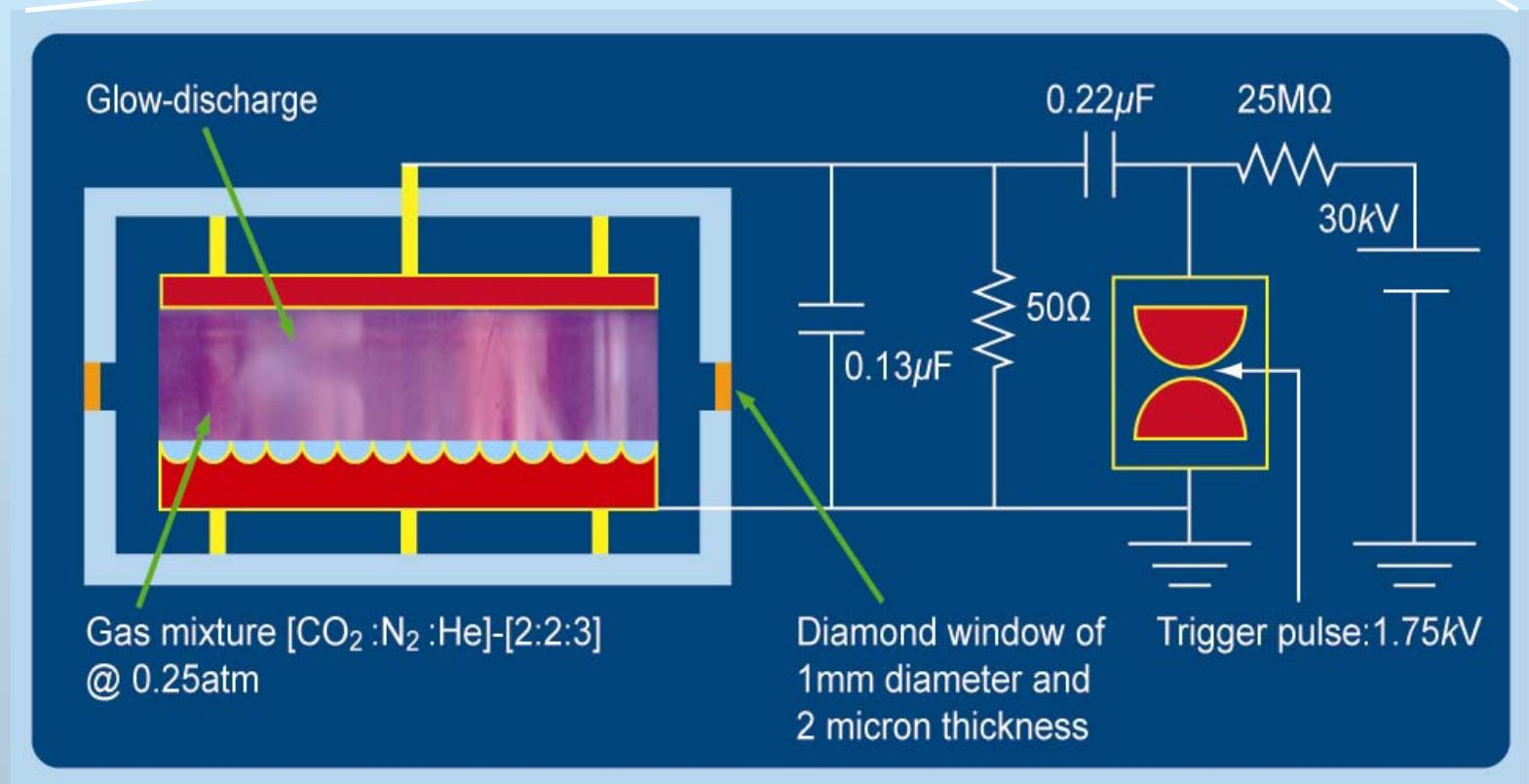
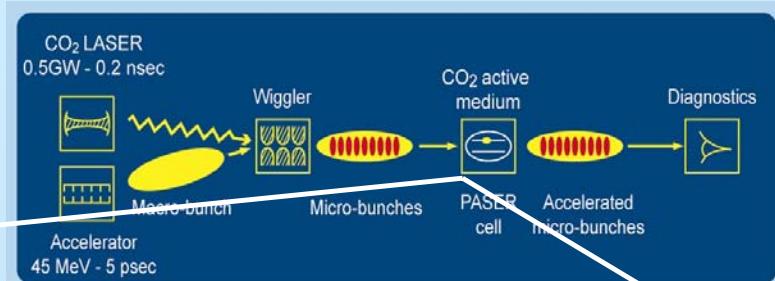


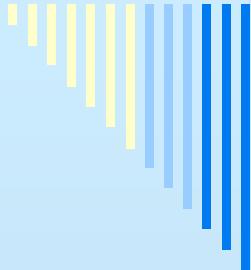
PASER: Proof-of-Principle Set-up





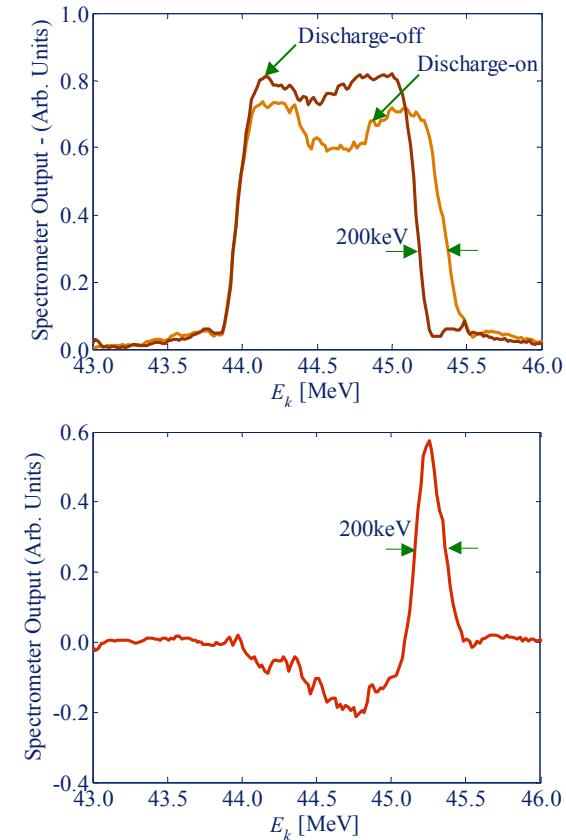
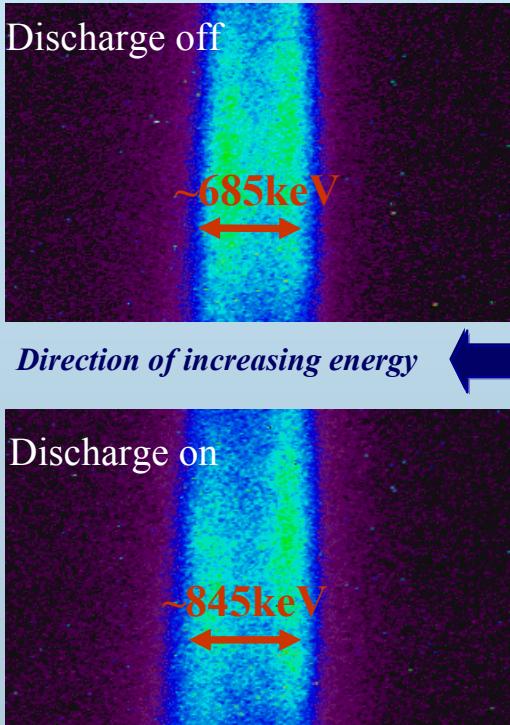
PASER Cell

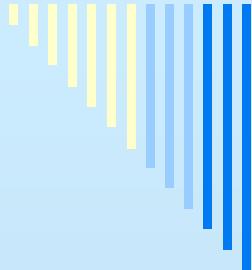




PASER: Experimental Evidence

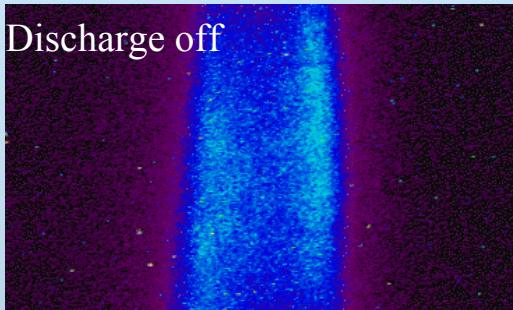
1.5% peak-to-peak energy modulation



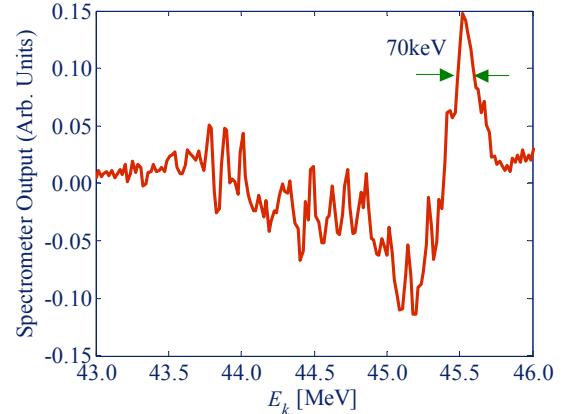
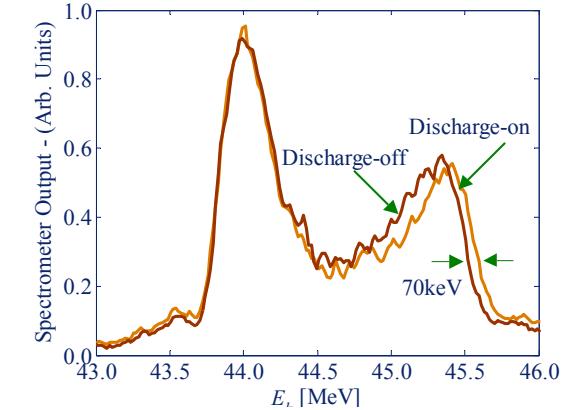
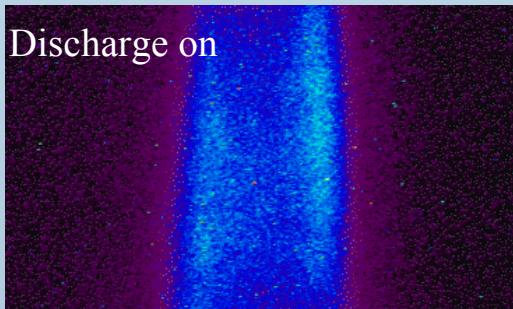


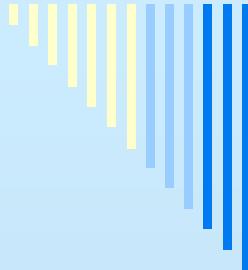
PASER: Experimental Evidence

3.0% peak-to-peak energy modulation

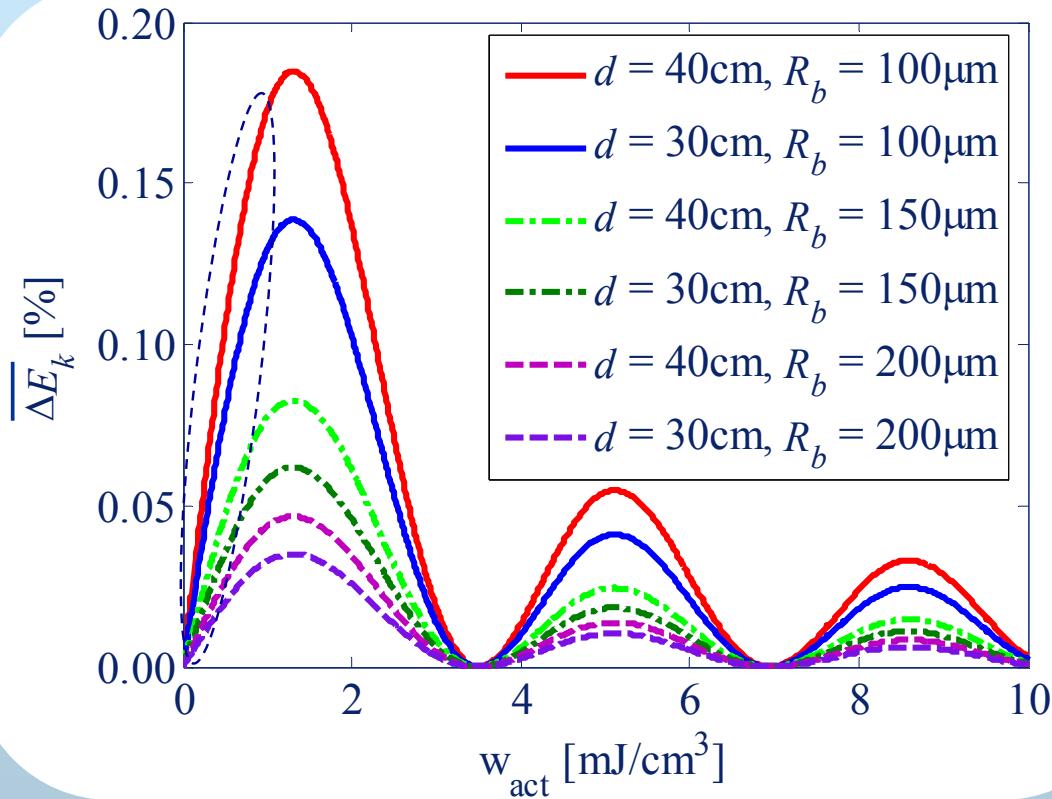


Direction of increasing energy ←

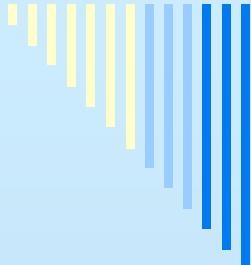




PASER: Theory vs. Experiment



$M = 120$
 $N_{\text{el}} = 2 \times 10^8$
 $\Delta = 1\mu\text{m}$
 $E_k = 45\text{MeV}$



Coherent Collisions of the 2nd Kind

200keV energy gain

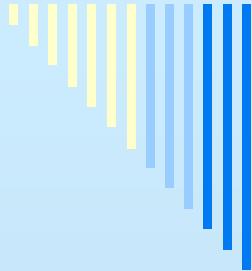


~2,000,000 collisions of the second kind between the acc. electron and the excited molecules of the CO₂ mixture

Coherent Collisions for Acceleration !!

Or

Particle Acceleration by Stimulated Emission of Radiation !!



Details: Samer Banna

Wednesday WG 3 & 7 at 10:30

see also

Wake Amplification: Paul Schoesaw

Wednesday WG 3 & 7 at 11:00