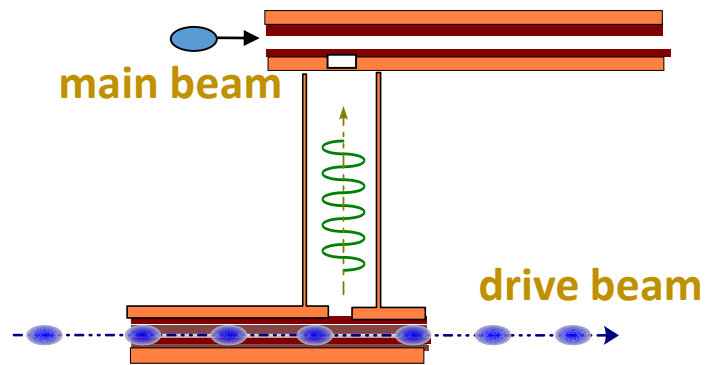


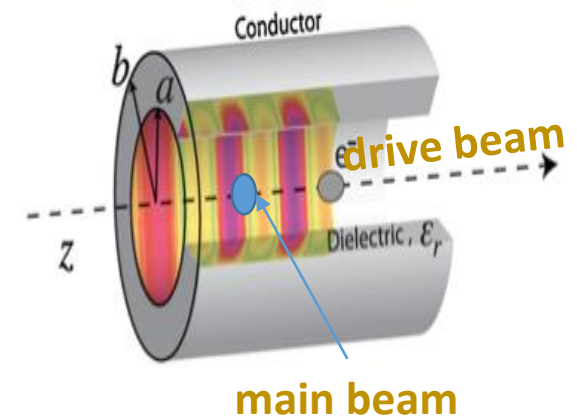
# ALEGRO WG6 (Structure Wakefield Acceleration)

Philippe Piot & John Power



Alexei Lyapin  
Francois Lemery  
Yuri Saveliev  
Levi Schachter  
Sergey Shchelkunov  
Vasili Tsakanov  
Dan Wang  
Igor Zagorodnov

***10 core members***



# Agenda

## **WG session 1 (Tues 9:00am-10:15am) Introduction + Strategies**

9:00-9:45 Introduction, goals of the workshop Discussion

9:45-10:15 Strategies toward a SWFA collider Discussion

## **WG session 2 (Tues 10:30am-11:45am) Accelerating structures**

10:45-11:00 Dielectric Wakefield Resonator Accelerator, Sergey Shchelkunov

11:00-11:15 PASER, Levi Schachter

11:15-11:30 New structure design at AREAL, Vasili Tsakanov

11:30-11:45 A dielectric disk structure for improved the efficiency, John Power

## **WG session 3 (Tues 1:00pm - 3:00pm) [joint WG3+WG6+WG7] Simulations tools**

13:00-13:30 SWFA 'State-of-the-art and Future needs', Philippe Piot

13:30-14:00 DLA 'State-of-the-art and Future needs', Cowan & Niedermeyer

14:00-15:00 Simulation Similarities and Differences between DLA and SWFA, Jorge Vieira

## **WG session 4 (Tues 3:30pm - 6:00pm) Drive bunch Physics**

15:30-16:00 ECHO, Igor Zagorodnov

16:00-16:20 Shaping via Emittance Exchange John Power

16:20-16:40 shaping simulation + some experiment at PITZ Francois Lemery

16:40-17:00 DWFA experiment at LUCX Alexei Lyapin

17:00-17:20 Dielectric Wakefield R&D programme at Daresbury lab Yuri Saveliev

17:20-17:40 Phase mapping with two-beam interferometry method in DWA Dan Wang

17:40-18:00 Discussion

## **WG session 5 (Wed 10:45am-12:15pm) Opportunities for collaboration & facilities**

10:45-12:15 Facility: Yale Accelerator (Sergey Shchelkunov); Daresbury (Yuri Saveliev), DESY, Sinbad (Francois Lemery; TTX (Dan Wang); LUCX in Japan (Alexey Lyapin), CERN Candle (?), AWA at Argonne (John Power), FAST at FNAL (Philippe Piot) AREAL Vasili Tsakanov, FACET (?); ATF (?)

## **WG session 6 (Wed 1:30pm - 3:30pm) Witness-bunch Physics**

1:30-2:30 0:35 positron and electron emittance discussion

2:30-3:30 1:00 positron and electron shaping discussion

## **WG session 7 (Wed 4:00pm - 6:00pm) Discussion on report write-up**

4:00-6:00 Summaries of WG & Writeup

# Strategy of WG6 Chapter for ESGG Document

- Long term view
    - Strawman for TBA is done
    - Strawman for CWA is needed
  - Structures
    - Dielectric vs. Metallic, 10 GHz-1 THz, Dielectric vs. Metallic
    - Structure down select criteria
      - TBA structure
        - $r/Q$  (efficiency), complexity, HOM damping for long-range BBU, etc.
      - CWA structure
        - Wakefield, Short-range BBU control of driver, etc
  - Simulation
    - Existing Simulation Tools
      - Structure: Eigenmode, Wakefield, Fully EM
      - Beam: propagation, IMPACT, GPT, ASTRA, etc.
    - Future Simulation Tools
      - Incorporate material properties, spatially-dependent dielectric, dispersion, etc
      - Multipactor, Metallization, etc.
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- WG session 1
- WG session 2
- common with DLA
- WG session 3

# Strategy of WG6 Chapter for ESGG Document

- Drive Bunch Physics
    - Drive Bunch Shaping and Transformer Ratio
    - Drive Bunch Shaping for drive bunch utilization
    - Modeling Wakefield and BBU
  - SWFA State of the art
    - Survey of SWFA experiments done and planned
      - Frequency? Geometry?
  - Facilities
    - Classify by Q? Energy? Etc (Add to Erik Adli's table)
    - Identify Collaboration between experiments and facility
  - Witness-bunch Physics
    - Main bunch shaping for increased beam loading → efficiency
    - Lower Emittance possibilities from Damping Ring?
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- Common with PWFA
- WG session 4
- WG session 5
- WG session 6