

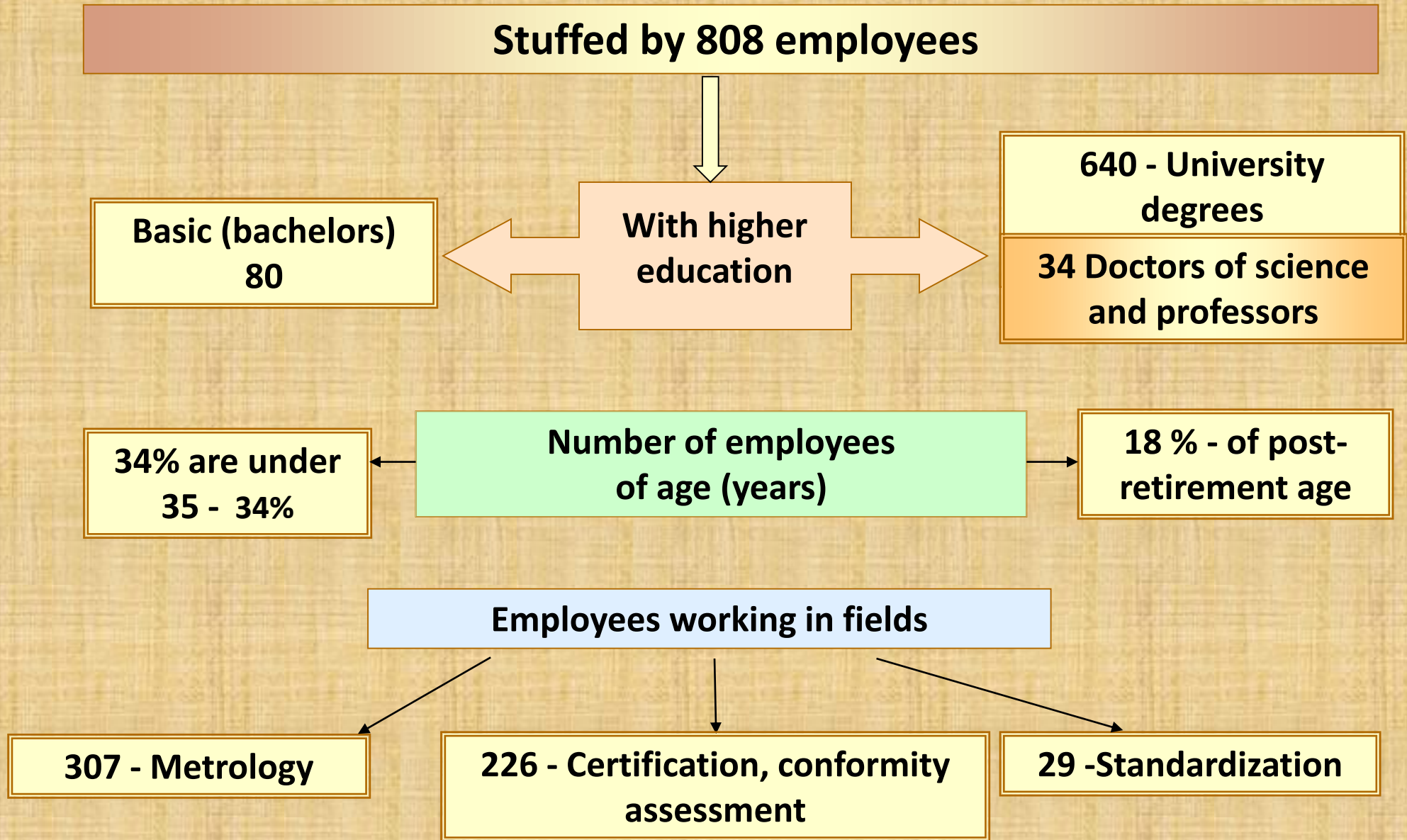
# Current activities of Ukrmetrteststandart in the field of acoustics and vibration measurements

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BIPM  
Sèvres  
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# Ukrmetrteststandart personnel



# International cooperation



**PTB**  
Phuesikalish-  
Technische  
Bundesanstalt,  
Germany

**ISO**  
International  
Organization for  
Standardization

TK ISO/TC 158 "Gas analyses"  
ISO/TC 193 "Natural gas"



**BIPM**  
International bureau  
of weights and  
measures



**OIML**  
International Organization of  
Legal Metrology



# International cooperation



**IMEKO**  
International  
measurement  
confederation



**COOMET**  
Eastern Europe  
Organization of National  
Metrological Institutions for  
Central and Eastern Europe  
States



**EASC**  
The interstate council for  
standardization,  
metrology and certification



# Calibrations (verifications) per year

Accredited  
ISO 17025  
QMS was  
approved by  
COOMET peer  
review



Reference vibration transducers - 20



Vibrometers - 500



Sound level meters - 600



Ultrasonic flaw detectors and blocks for Non Destructive Testing (NDT) - 200



Audiometers - 100



Ultrasonic medical diagnostic systems - 800

Lab has 7  
fulltime  
employees



# National primary standard of Ukraine in the field of vibration, SAM, ISO 11063-11

In 2019 Ministry approved the primary reference standard as National reference standard

Low Frequency shaker 0,1 – 100 Hz



High Frequency shaker 5 Hz – 20 kHz



HF shaker (5 Hz to 20 kHz)  
9155D - 831 Modal Shop Inc., PCB Group

Laser head



Pneumo-  
mounts



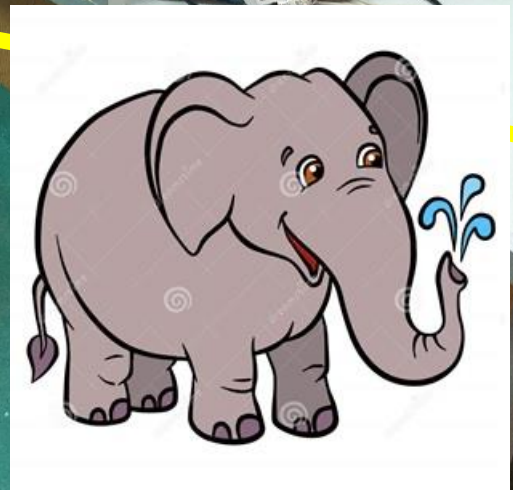
Air bearing  
shaker



Felt, a woolen  
fibrous, no  
bolting



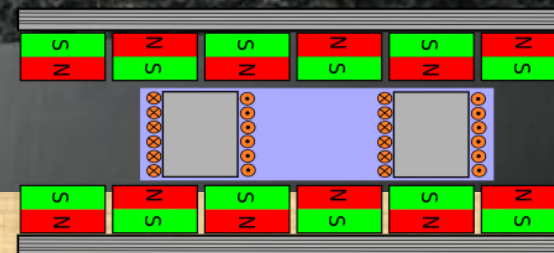
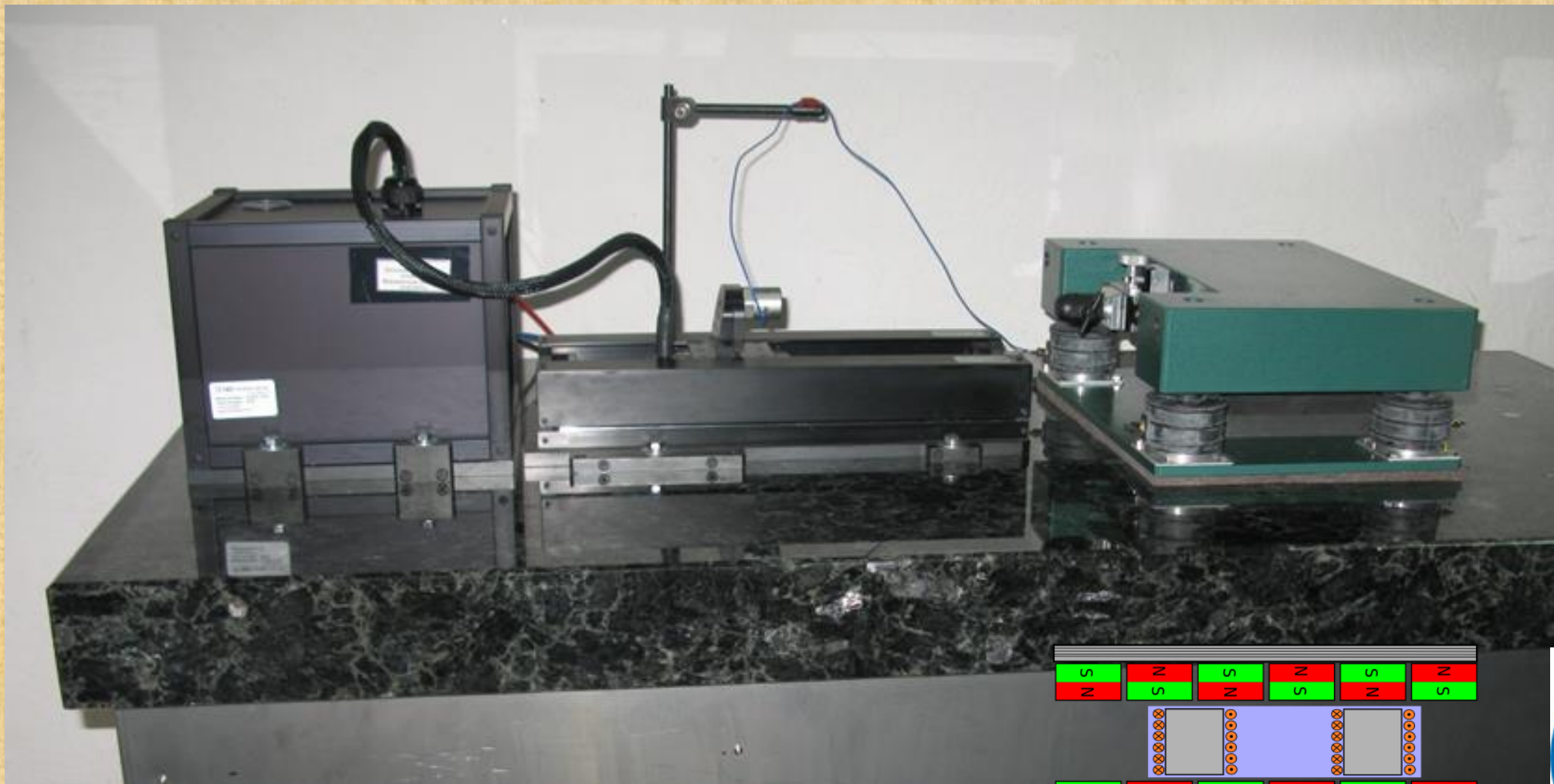
Two level  
vibration  
isolation  
Mass of upper  
plate now is  
40 kg, will be  
100 kg



Reference  
transducer

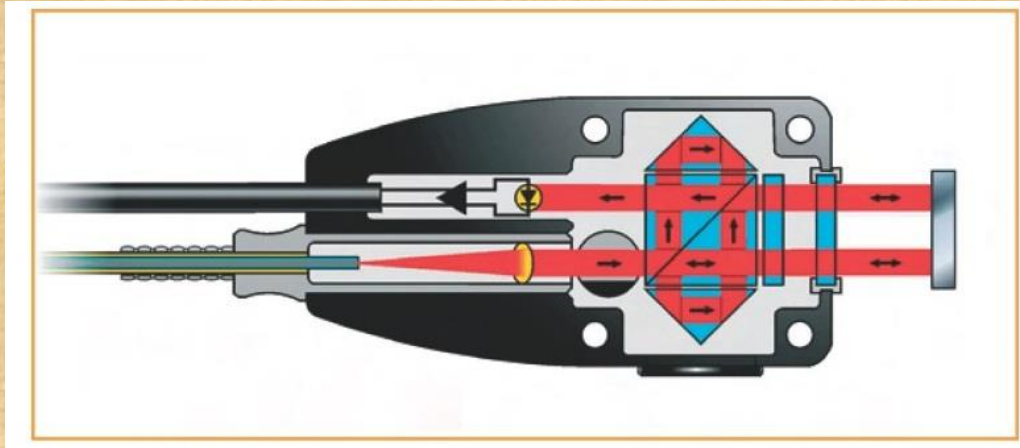


**LF shaker (0,1 – 100 Hz)  
9155D-779 Modal Shop Inc., PCB Group**

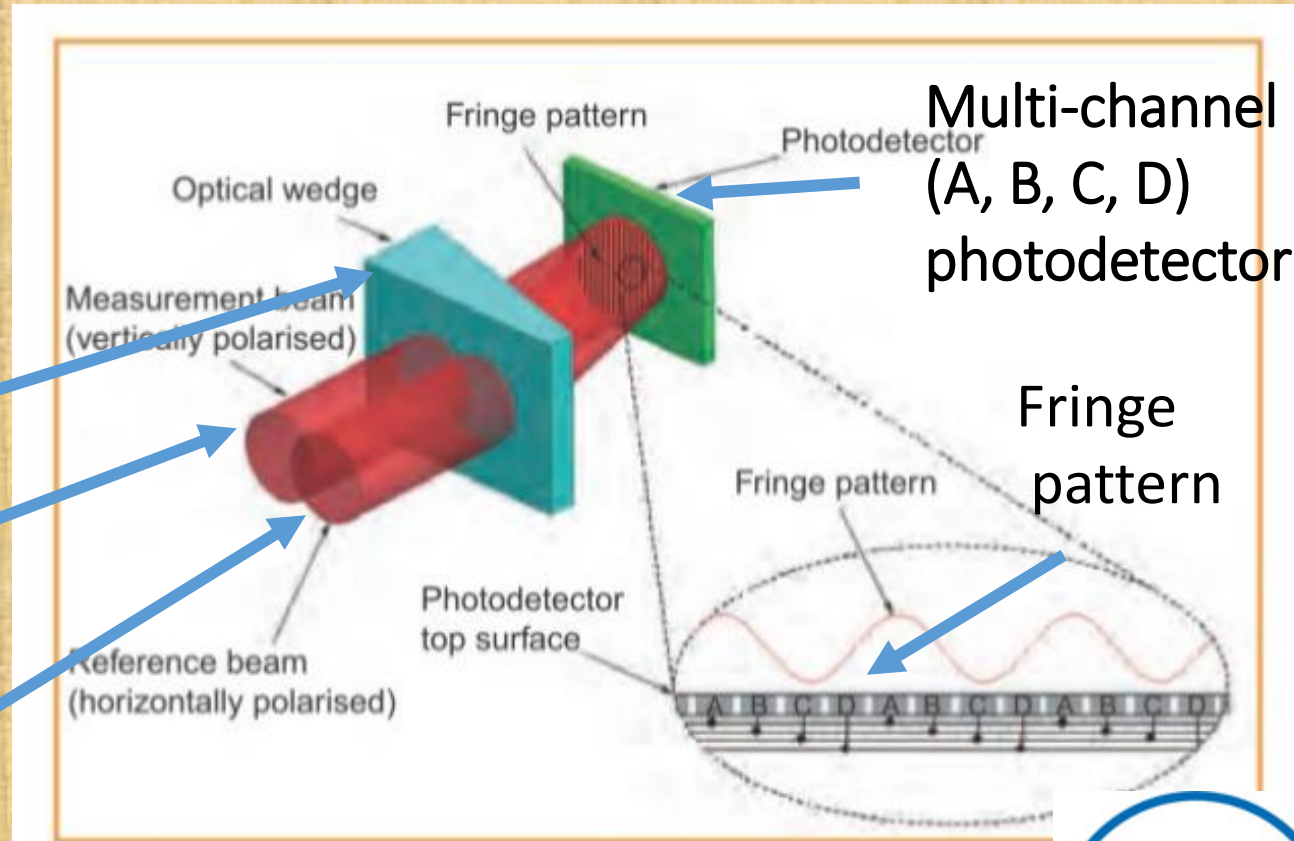




# Homodyne RANISHAW Double Pass Interferometer



## Optical wedge and interference patterns



Optical wedge

Measurement beam (vertically polarized)

Reference beam (horizontally polarized)

Figure 4: optical wedge and interference patterns



Frequency	Expanded uncertainty, %
0,2 to < 0,6 Hz *	1 *
0,6 to < 1,0 Hz *	0,6 *
1 to 5 Hz *	0,3 *
> 5,1 to 1000 Hz	0,5
> 1,0 to 5,0 kHz	0,7
> 5,0 to 10,0 kHz	1,5
> 10,0 to 15,0 kHz	2,0
> 15,0 to 20,0 kHz	3,0

\* Actual LF specifications are being specified



# Anechoic acoustics chamber



**Set of shakers and measuring instruments for calibration of vibration transducers**



**Ear simulators, artificial  
mastoid, analyzer for  
calibration of audiometers**



**Set of ultrasonic  
phantoms for calibration  
of medical diagnostic  
ultrasound systems**

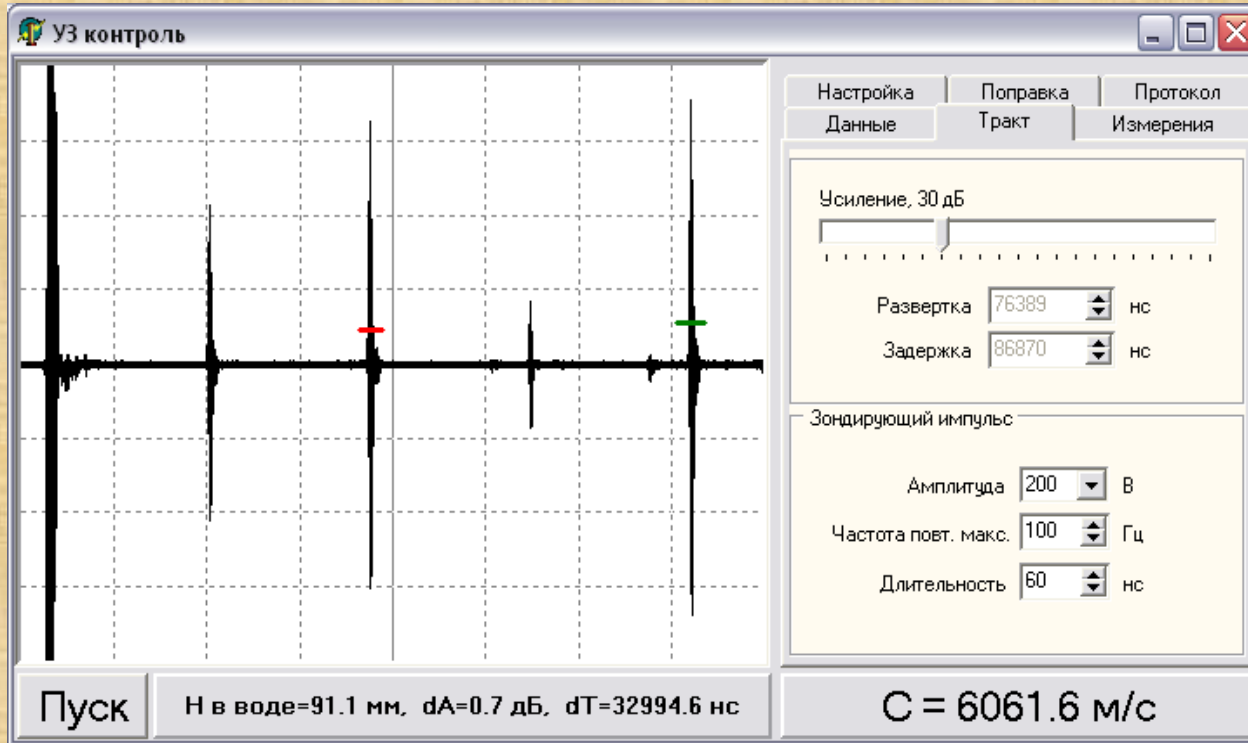


# Ultrasound immersion bath

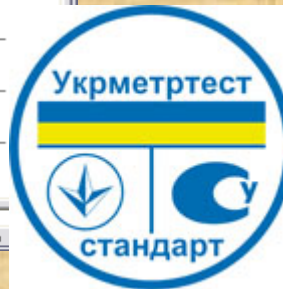
Measurements of velocity and attenuation of ultrasonic waves in different solid media



How the measurement results are presented  
Time delay, attenuation, velocity of ultrasound  
Set of transducers: from 1 MHz to 10 MHz. The sampling rate – 40 MHz



At the moment we are participating in Pilot COOMET 706/RU/16 comparisons I believe that someday CCAUV will carry out comparisons in this field





Thank you for your kind attention!

Questions?

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