

# ESR Status February 18, 2020



- **first beam of C<sup>6+</sup> 400 MeV/u was stored and cooled last Friday, ESR could not continue due to adverse effects on other users**
- **after establishing stable beam conditions ESR operation continued Tuesday afternoon with commissioning of stochastic cooling system**
- **no tests with beam for user operation were possible for lack of time**

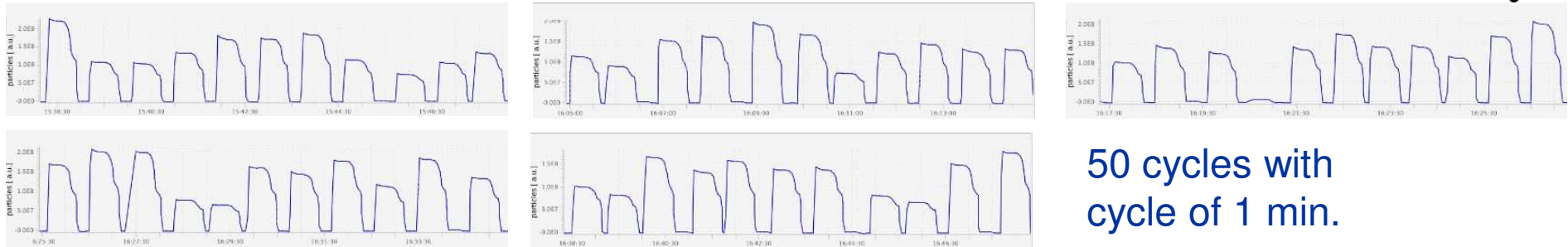
# Engineering Run Summary



**a total of 175 hours with beam was spent for machine development, less than half the recommissioning work (to achieve 2016 performance) is finished**

- only a few aspects required for 2020 user beamtime could be tested  
e.g. deceleration of highly charged ions still has to be developed  
incl. stochastic cooling**
- storage ring mode worked satisfactorily,  
but ESR operation in this mode still has to be learned**
- various beam diagnostic tools are under developments,  
but only as expert tools, not for routine operation**
- response time of control system is not satisfactory  
⇒ setting up and tuning for user operation will require increased time**
- read back of actual values would be useful for efficient operation and  
precise machine monitoring during user operation**

# Deceleration Cycle



50 cycles with  
cycle of 1 min.



reliable deceleration and fast  
extraction over several hours  
in storage mode

cycle time 1 minute

efficiency decreases with  
number of injected particles

efficiency for deceleration of  $\text{Ar}^{18+}$  form 70 to 13 MeV/u

