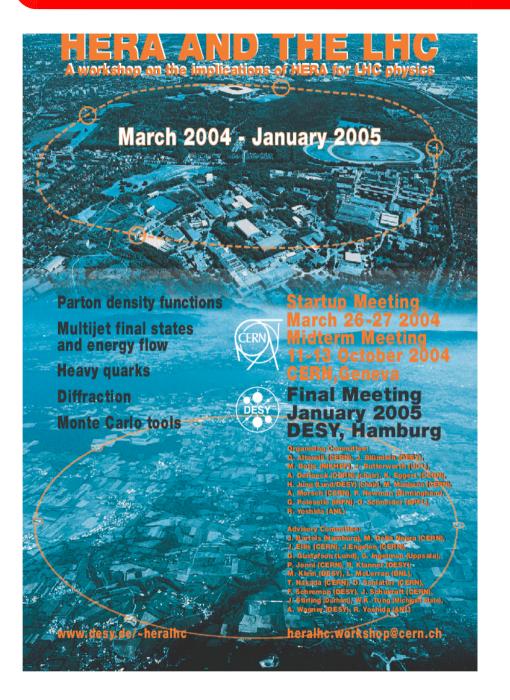
## HERA – LHC workshop



## Aims of the workshop:

- To identify and prioritize those measurements to be made at HERA which have an impact on the physics reach of the LHC
- To encourage and stimulate theory and experimental efforts
- To increase the quantitative understanding of the implication of HERA measurements for LHC physics

Final Meeting 21-24 March 2005, DESY

## HERA physics and the LHC

- Measurement of parton distributions to interpret LHC data and determine parton luminosities to 1%
  - → need measurement at HERA with high precision and high luminosity (large x)
- Measurement of gluon and (heavy) quark distributions for Higgs production
  - $\rightarrow$  need precise gluon distribution at large and small x ( $F_{L}$  measurement)
  - measurement of sea quarks at large x and heavy quark (bottom) density
- Accurate measurement of final states to describe parton radiation, multiple scatterings and underlying event structures, also for Higgs production
  - → precise measurement of small x
  - → non-linear effects (parton saturation) multi-jet production and jet correlations
- Understanding of diffraction potentially important for Higgs production in a clean experimental environment (similar to LC)
  - → need precise F<sub>2</sub><sup>D</sup> measurement especially at large Q<sup>2</sup> and large beta
  - → experimental issues: rapidity gaps, forward proton spectrometers
- Simulation of multi parton (particle) production
  - → develop of Models and MC generators under controllable conditions at HERA