

**Minutes of the Bfys meeting of 12 February 2010  
on Physics with VELO upgrade**

We held a Nikhef internal meeting to discuss *detector specifications* to define the most critical issues for the LHCb upgrade *physics program*?

On the Nikhef calendar page you can find the contributions by Marcel Merk and Patrick Kloppenburg.

Marcel emphasized the conservation of good impact parameter resolution, while Gerhard would give up a factor two in resolution if tails could be avoided.

Niels wondered if full 40 MHz readout is a good choice, as rare decay channels will be most important in the upgrade physics program. And L0 is very well suited to select those. Also removal of RICH1 is questionable, as this detector is important to identify kaons in tagging.

Rejection of low momentum tracks before the magnet was found important. Either by improving on TT with a better acceptance coverage and more depth along z, or by a magnetic field at the VELO. Eddy mentioned that the vacuum tank around the VELO sensors is not supposed to change.

Patrick addressed many items. The 40 MHz readout without first level trigger L0 will drive most of the upgrade changes if not all. He mentioned that the high level trigger HLT will profit that L0 need not be to be confirmed as a first step in HLT.

About the alignment Wouter stated that in the end overlap between the two VELO halves is not very important, although it helps enormously in the start-up.

A beryllium RF box was shortly discussed without a clear conclusion.

Unrelated to the upgrade, TK suggested an improvement of the profit of tracks in the OT.

*Tjeerd Ketel, 12 February 2010*