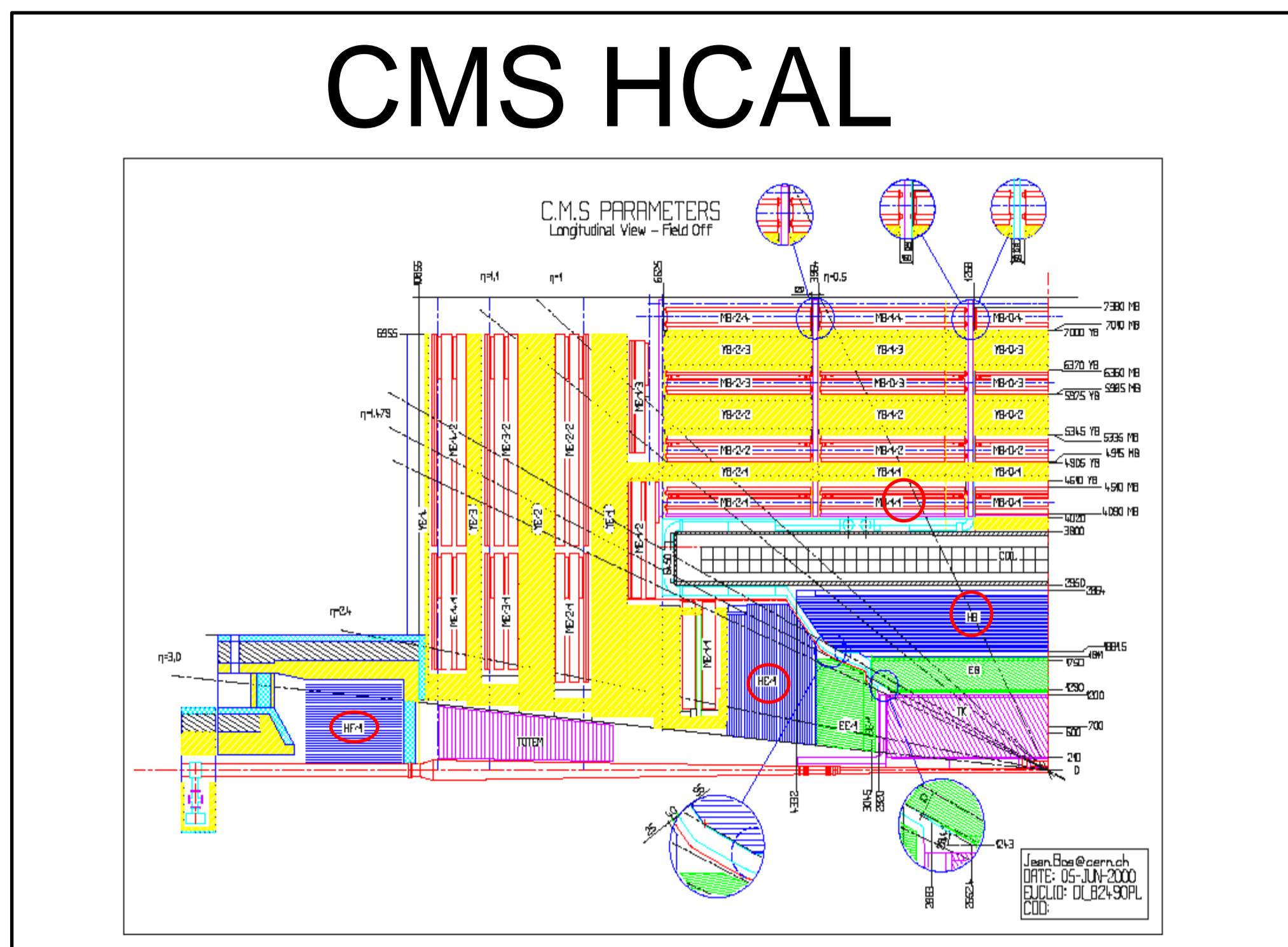
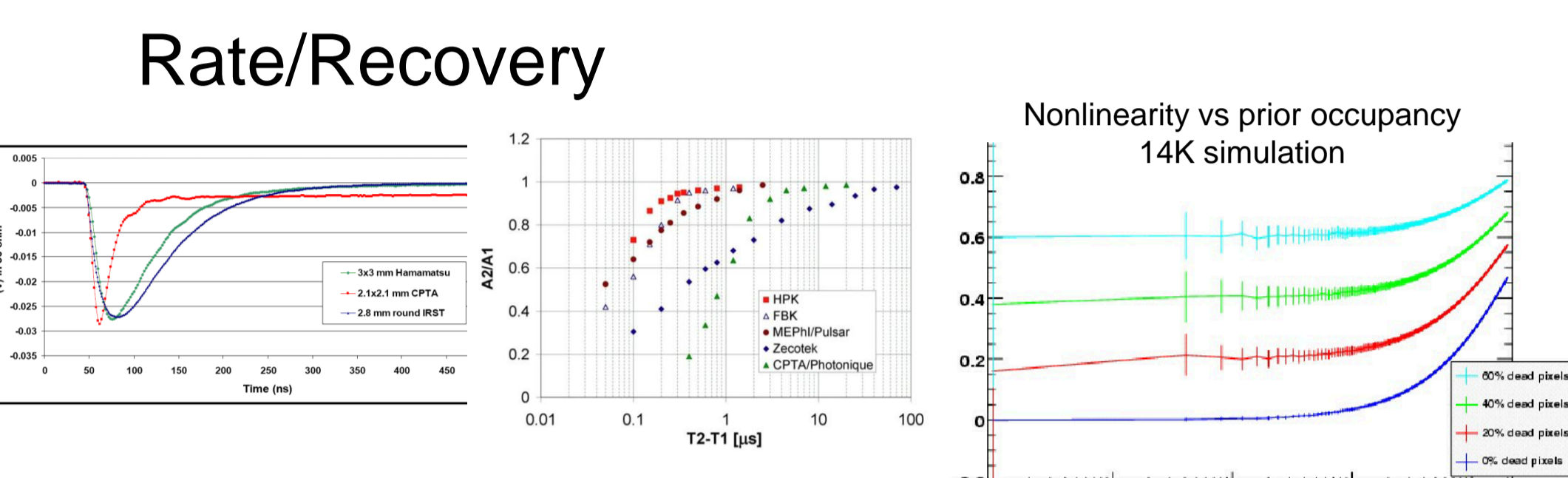
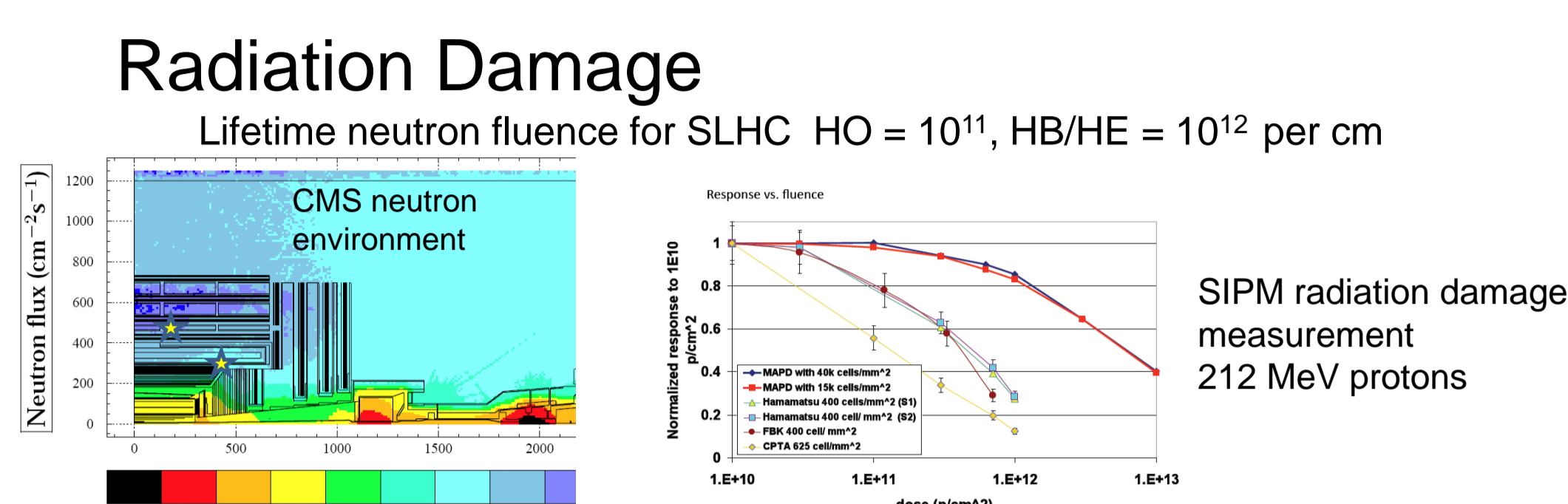


SIPMs for CMS HCAL

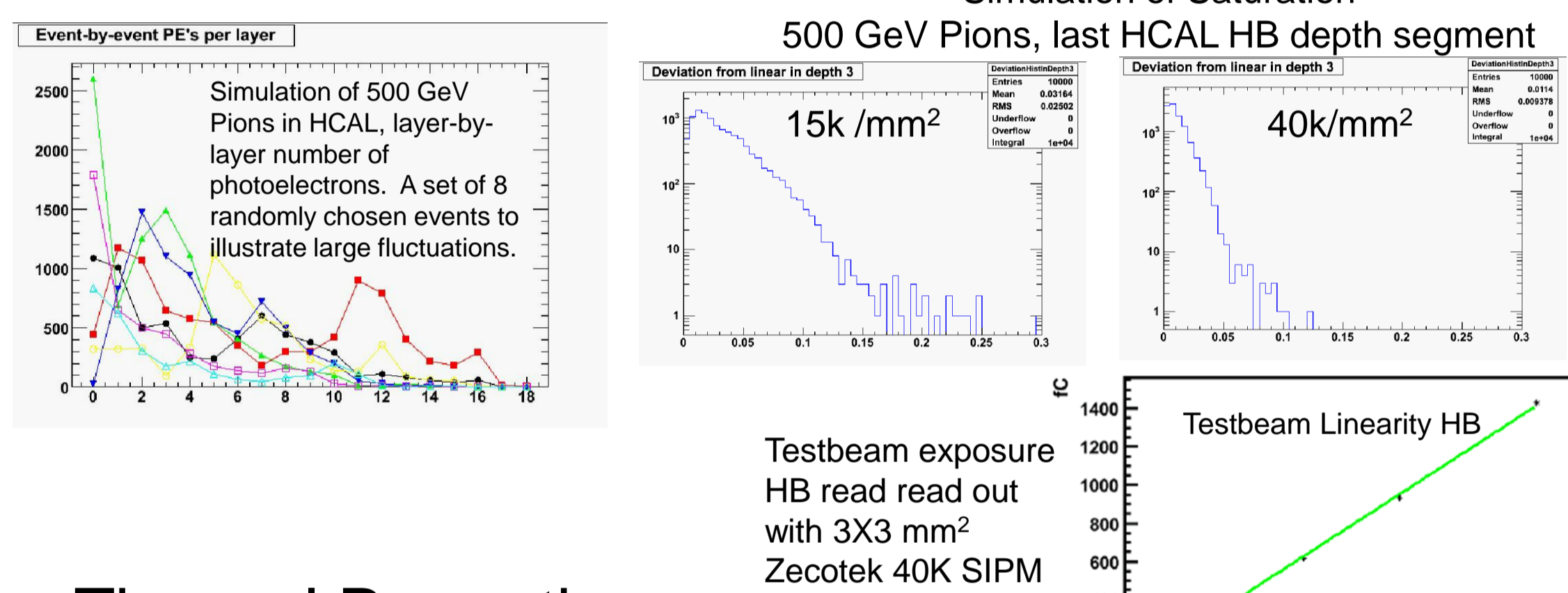
Jim Freeman (for the CMS HCAL group)



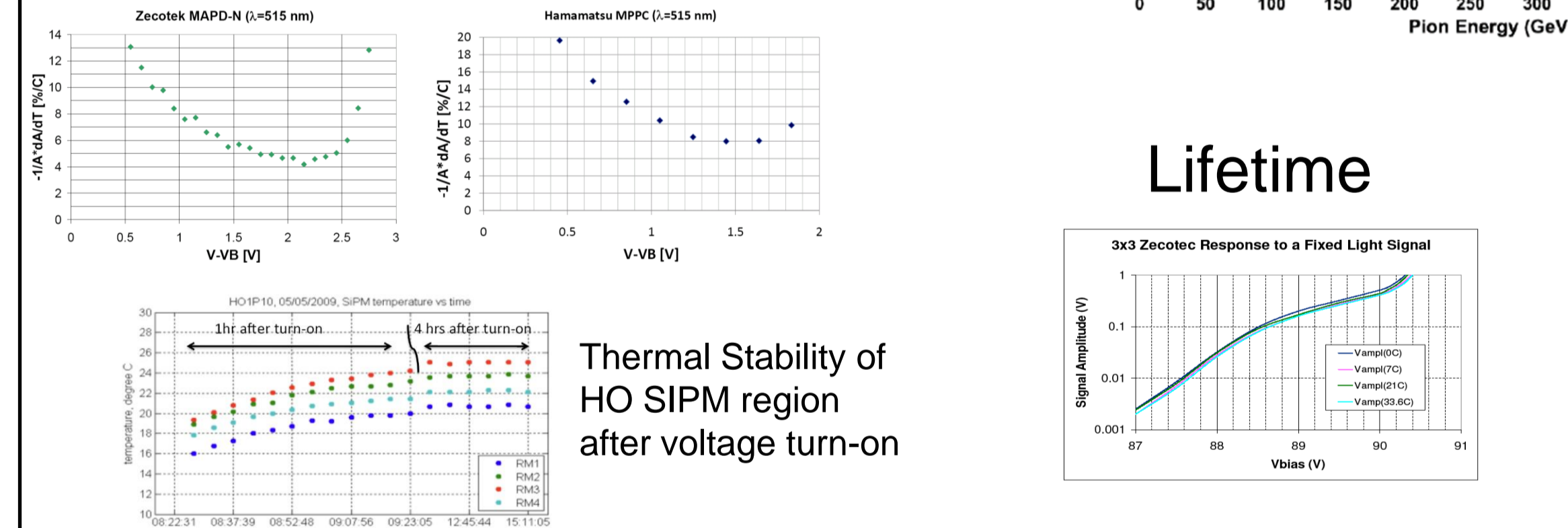
Environment & Issues



Dynamic Range/Saturation

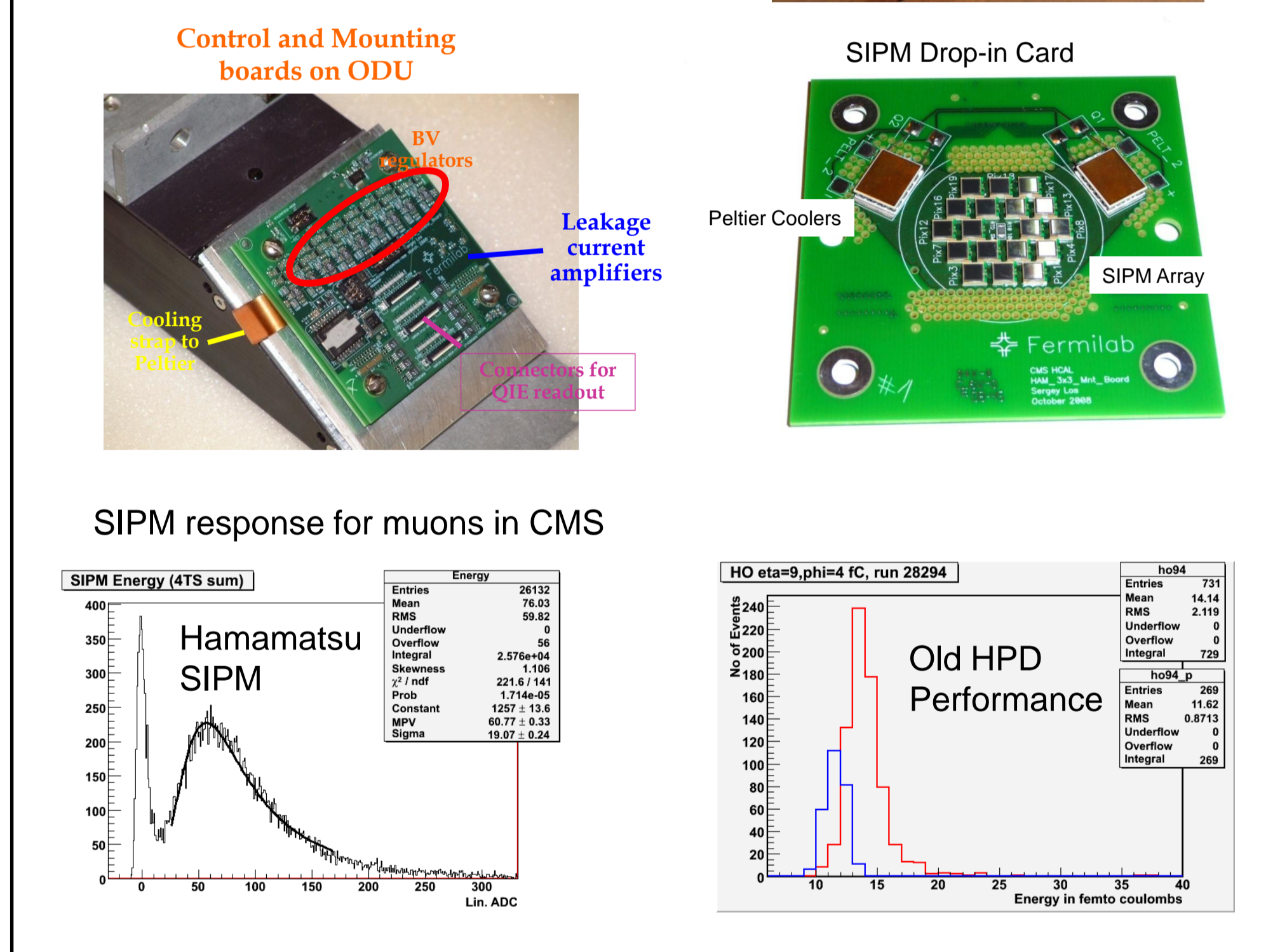


Thermal Properties



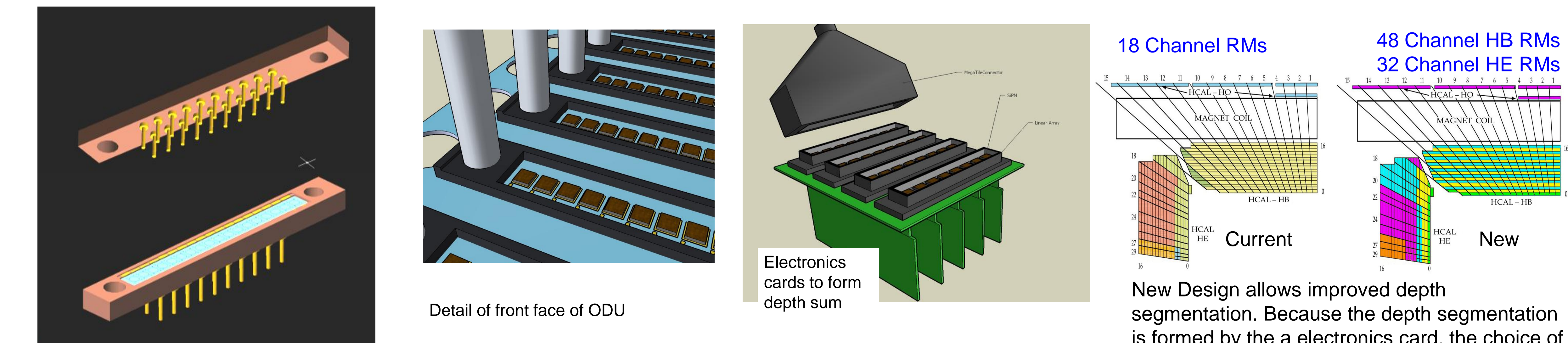
HO SIPM Upgrade

144 SIPMs installed into CMS in April 2009 and now operating.
36 Zecotek 15K/mm² 3X3mm, 108 Hamamatsu 400/mm² 3X3mm.
Install 1000 in 2010-2011



SIPMs for SLHC Hadron Calorimeter Upgrade

Use strips of SIPMs (18/strip). Total number of SIPMs required ~ 100K.
Installation Date ~ 2013 - 2014



The HCAL ODU is replaced by an "EDU" where single SIPMs per optical fiber are ganged together into depth segments, then digitized

New Design allows improved depth segmentation. Because the depth segmentation is formed by the a electronics card, the choice of exact depth segmentation can wait until real HC operation experience