Looking at Horizontal Main Injector proton emittances at 8 and 150 GeV in recent stores

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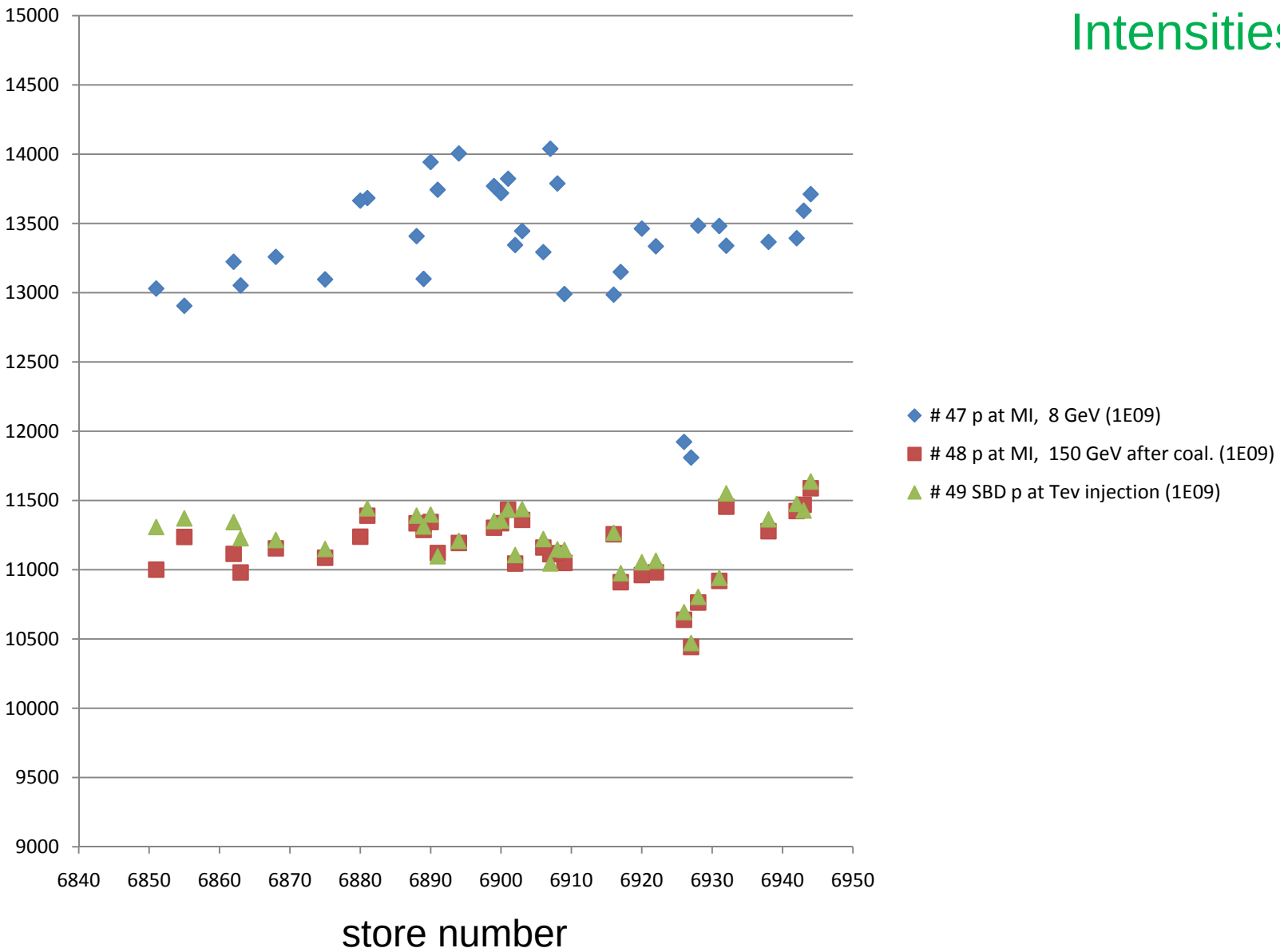
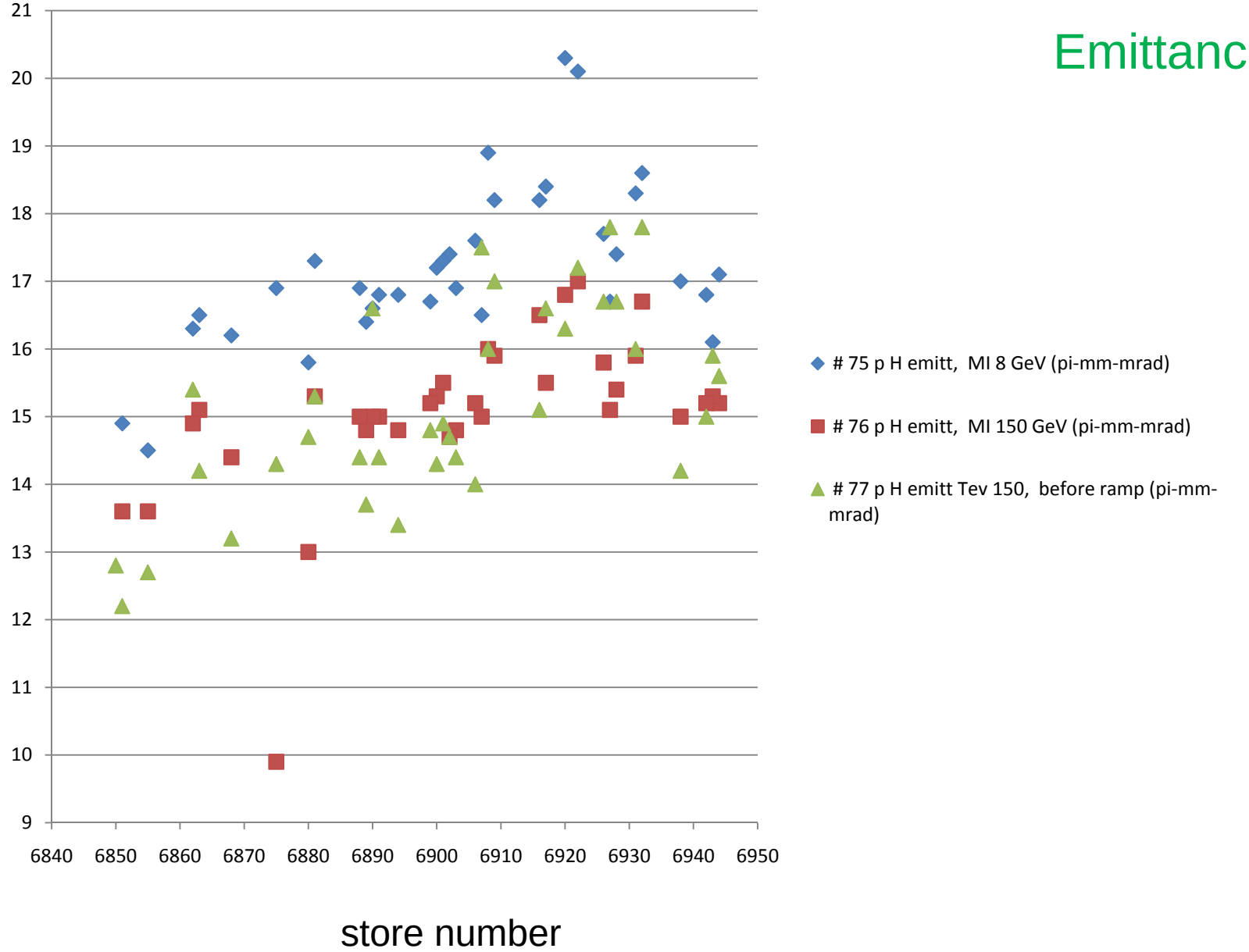
April 1, 2009

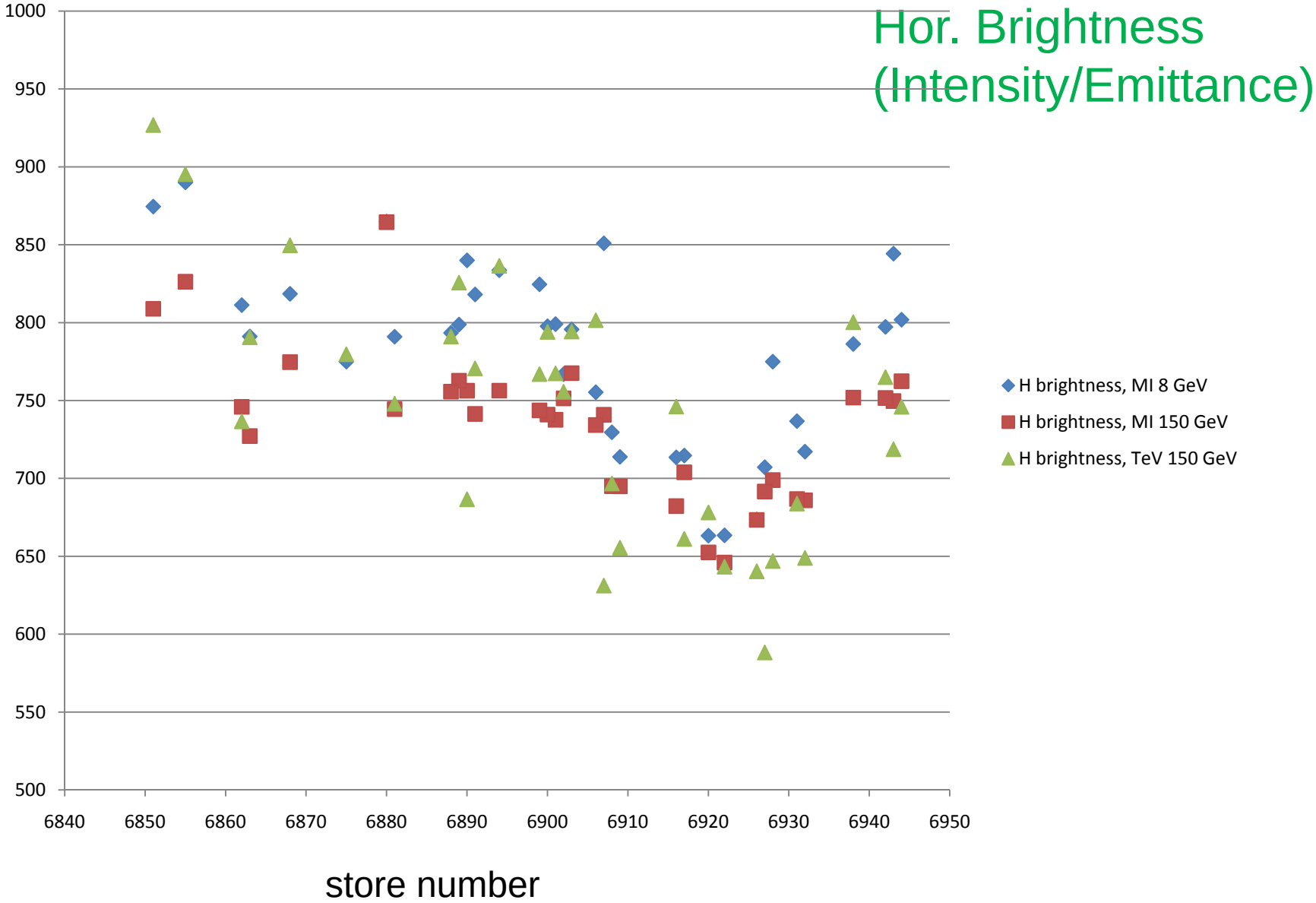
Stores 6850-6944 (Mar. 1-Mar. 30, 2009)



Stores 6850-6944 (Mar. 1-Mar. 30, 2009)



Stores 6850-6944 (Mar. 1-Mar. 30, 2009)



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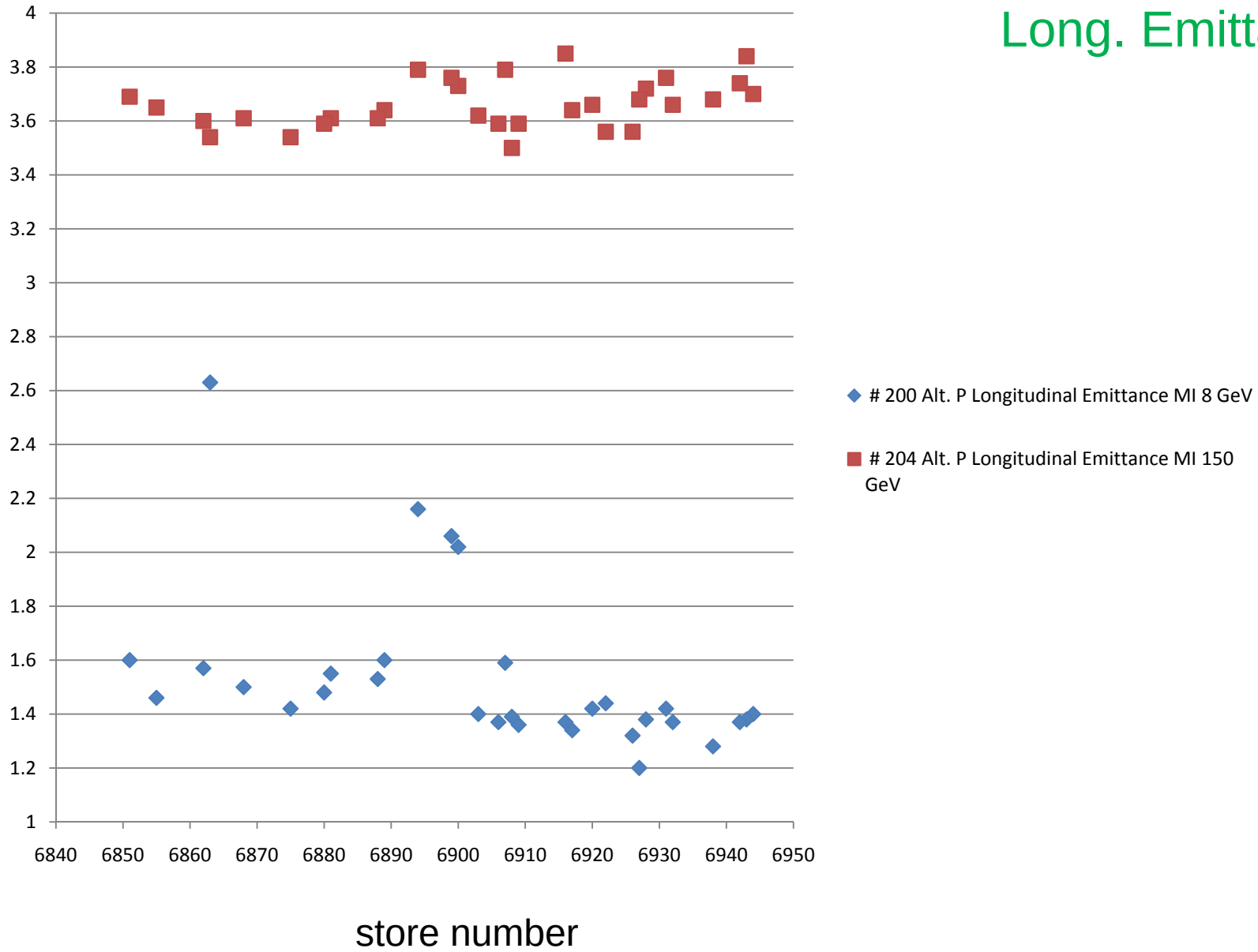
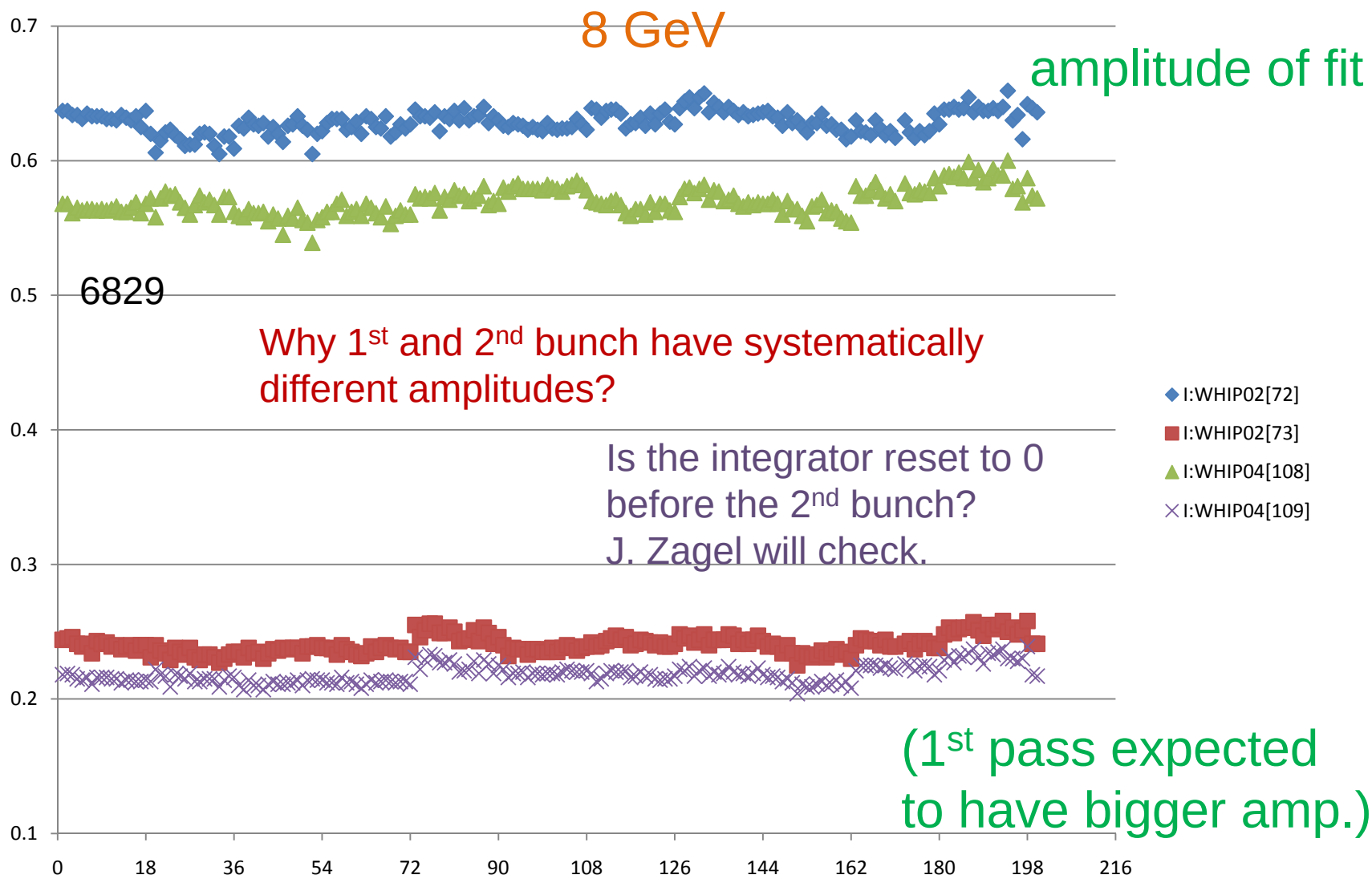
Long. Emittances



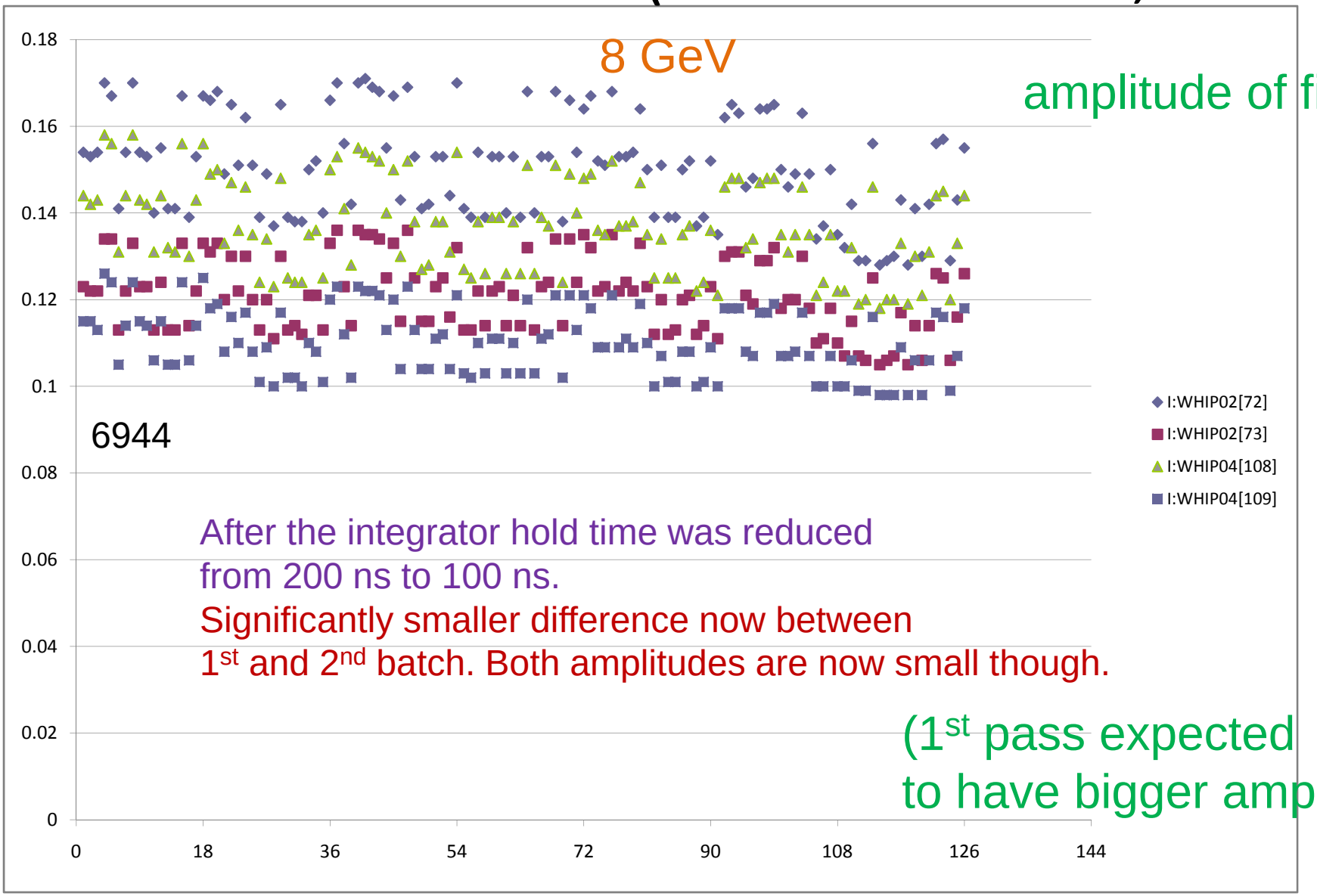
In the next pages we look at horizontal emittances as well as centroids, sigmas, amplitudes and χ's of the Flying Wire profile fits at Main Injector 8 and 150 GeV, comparing performance in mid February and late March.

Stores 6792-6829 (Feb. 10-Feb. 23, 2009)



Transfer number (18 per store with two bunches each)

Stores 6931-6944 (Mar. 26-Mar. 30, 2009)



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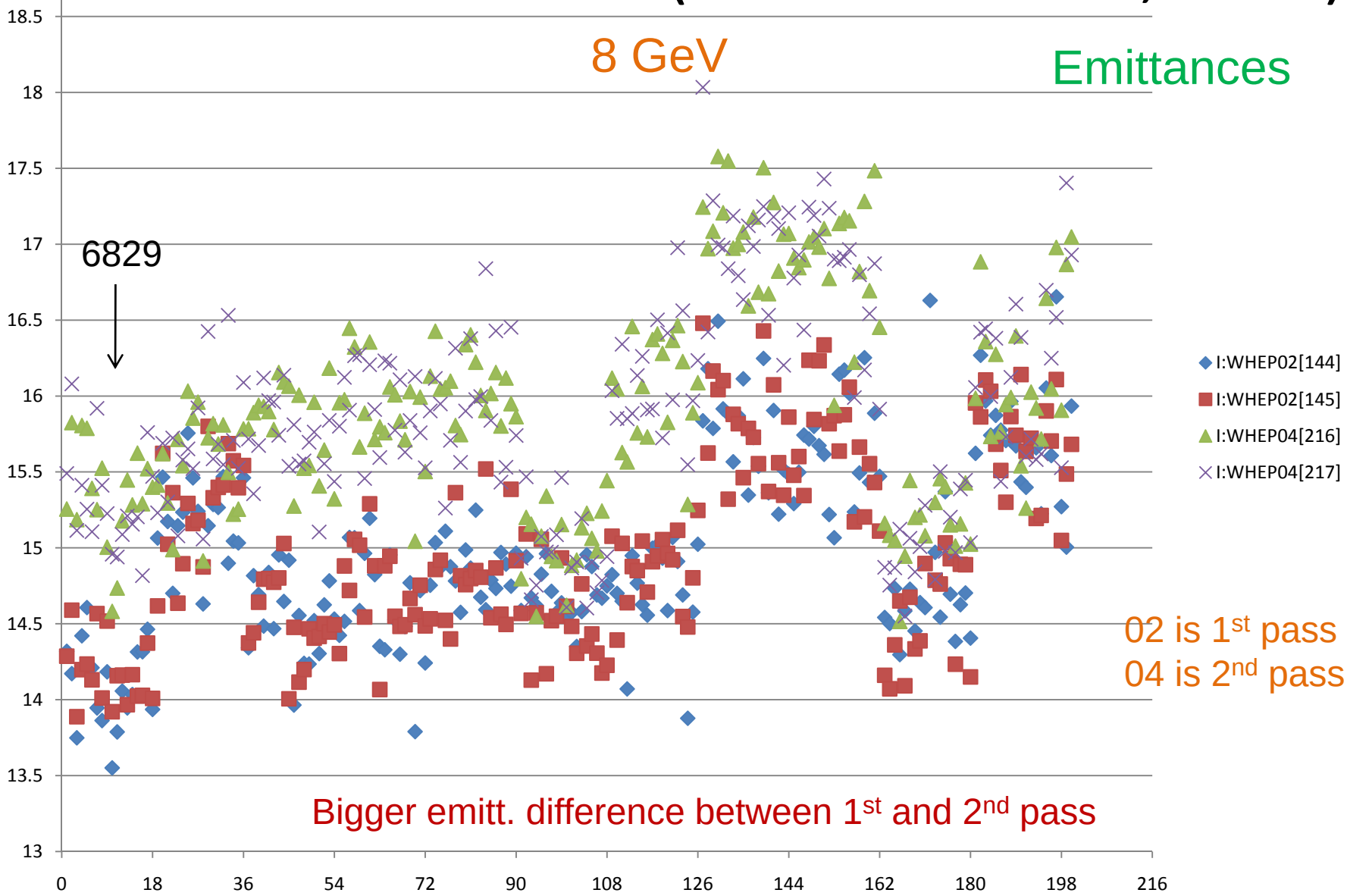
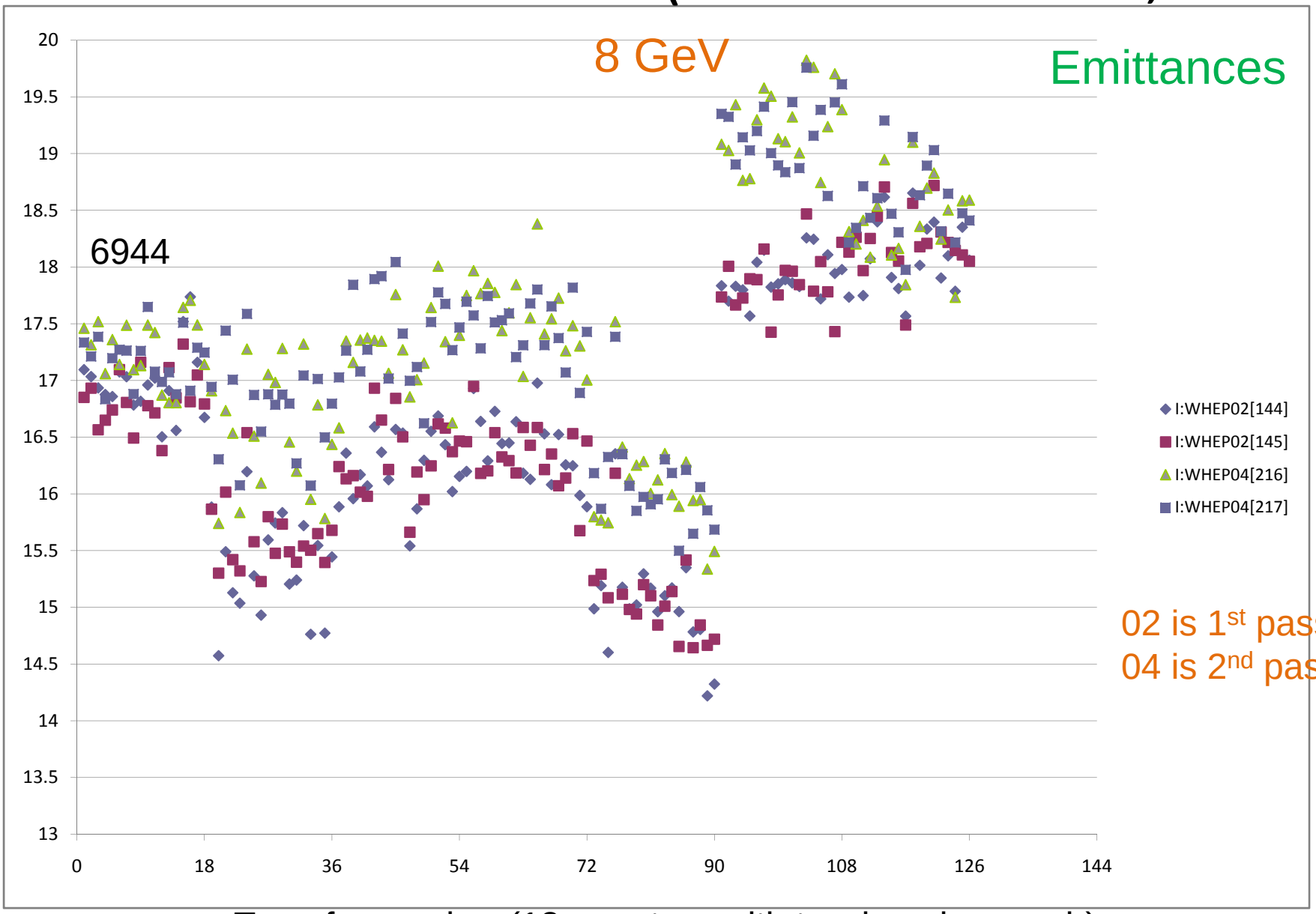


Transfer number (18 per store with two bunches each)

Stores 6931-6944 (Mar. 26-Mar. 30, 2009)



Transfer number (18 per store with two bunches each)

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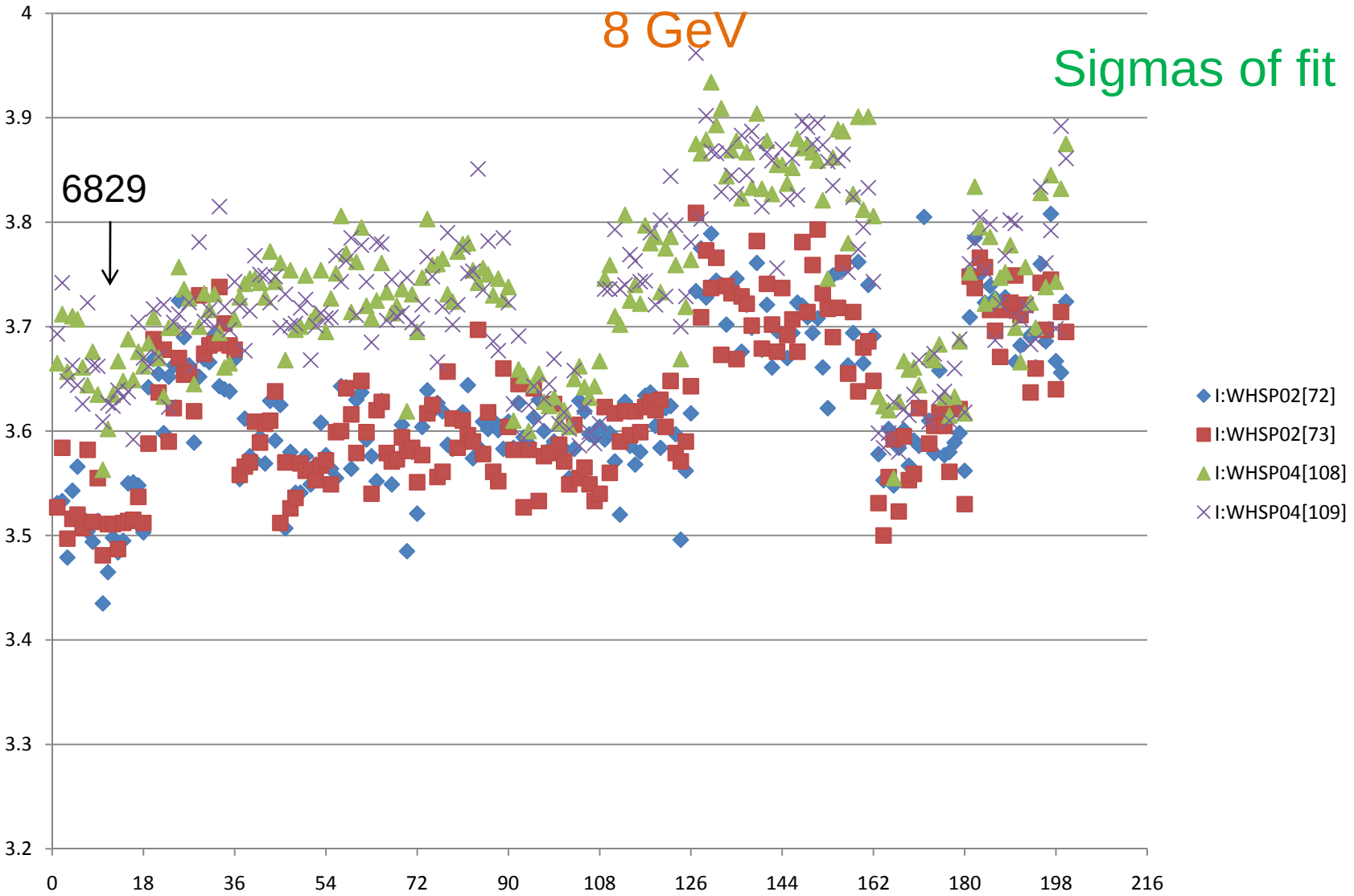

Transfer number (18 per store with two bunches each)

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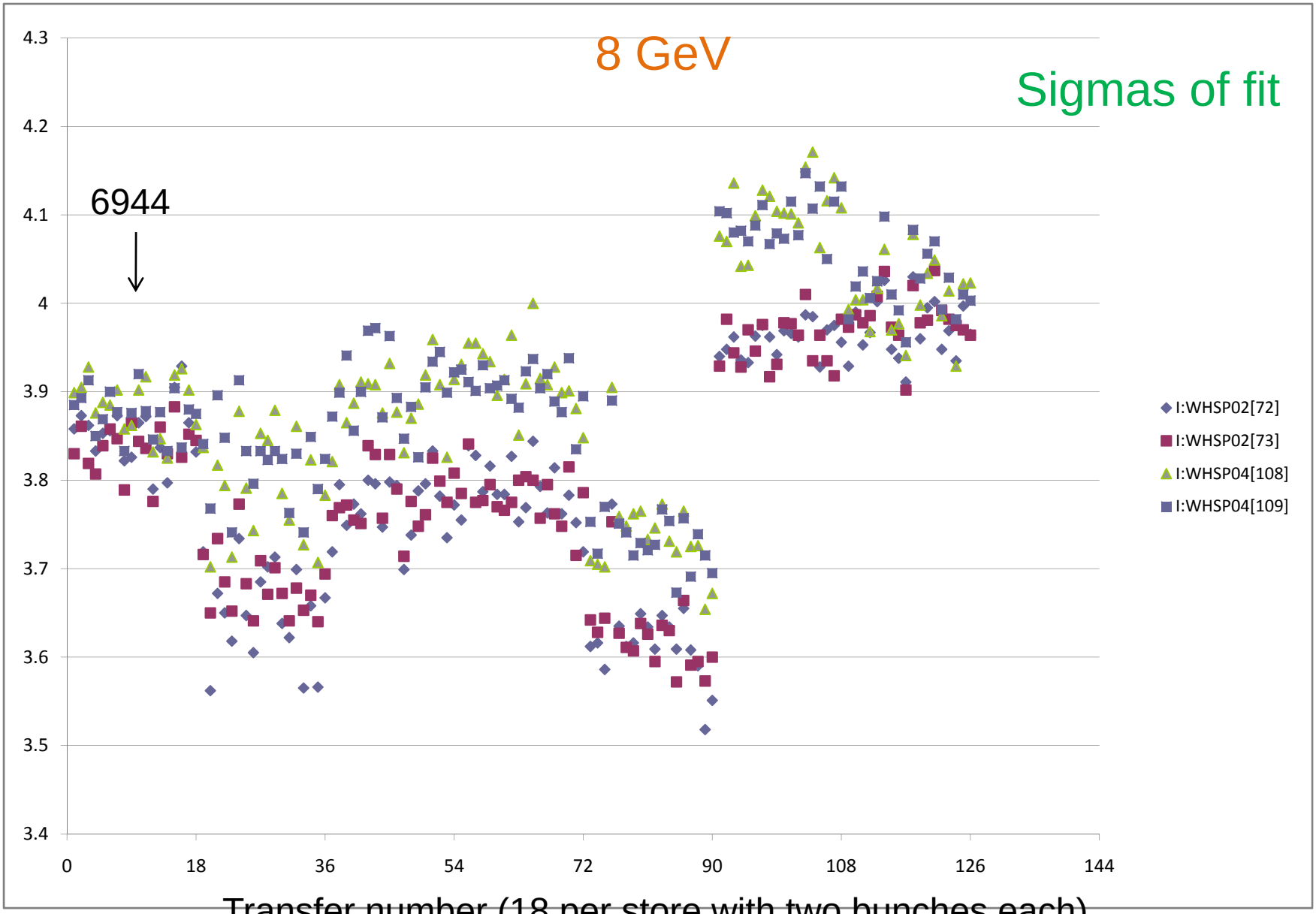
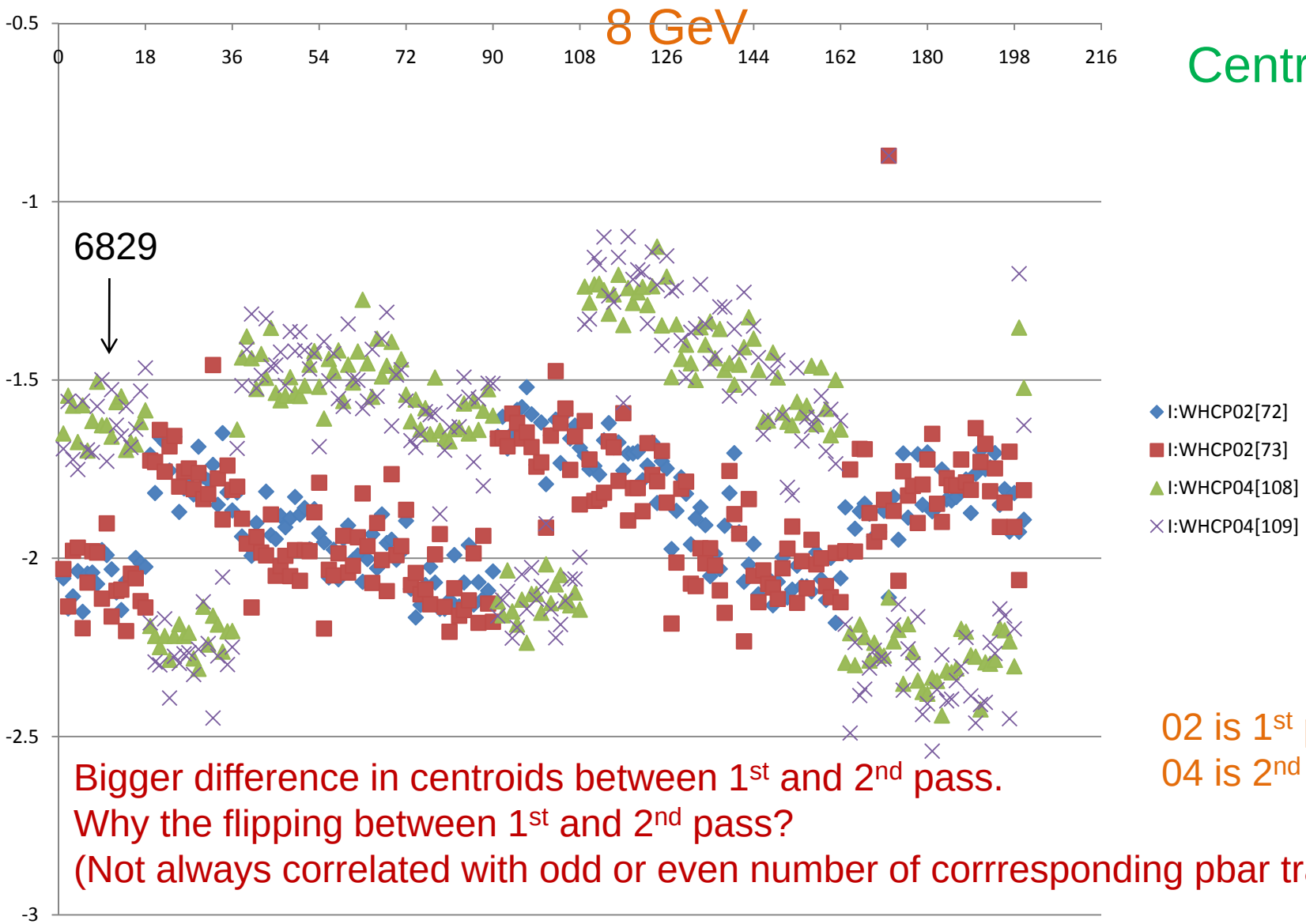


Stores 6792-6829 (Feb. 10-Feb. 23, 2009)

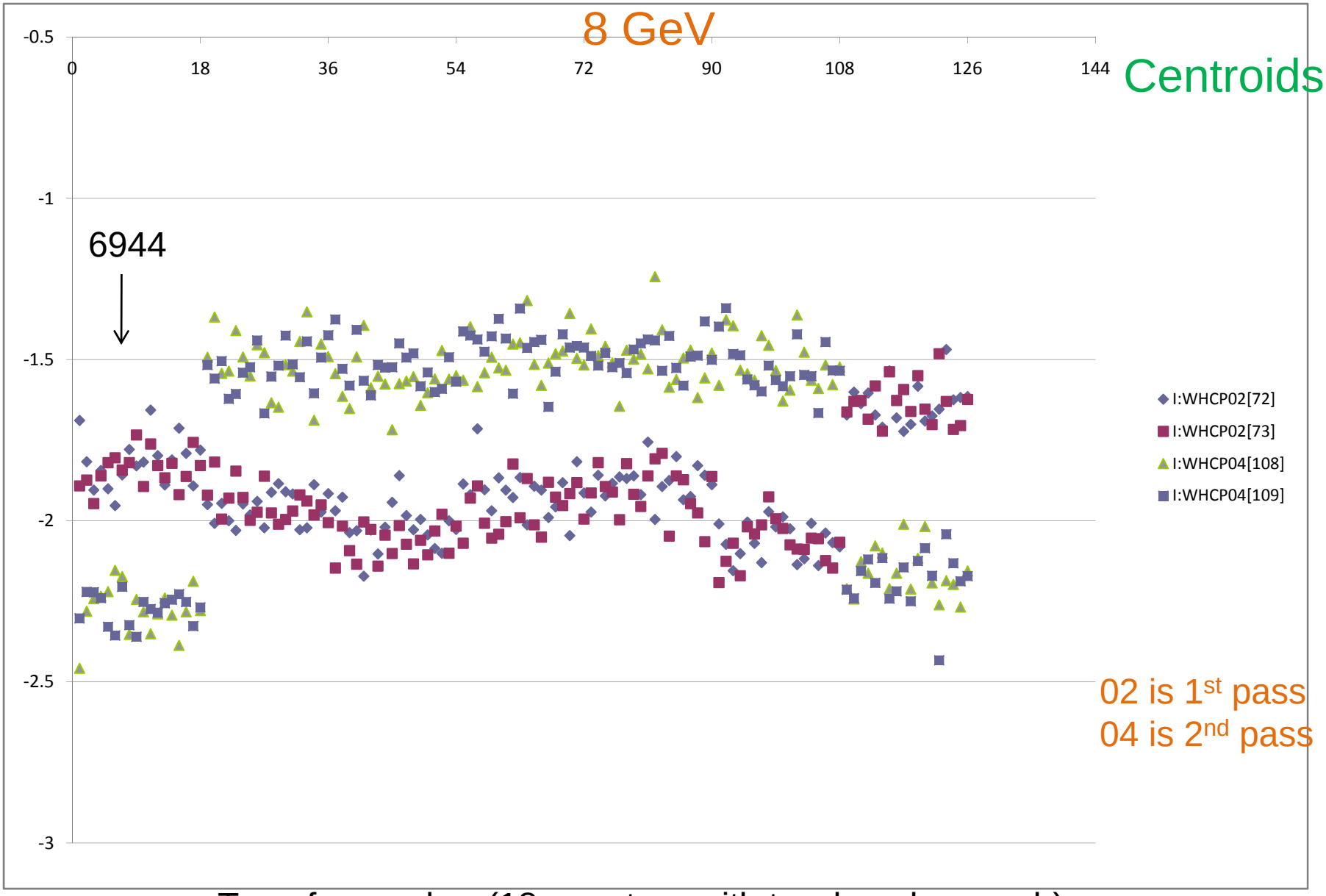


02 is 1st pass
04 is 2nd pass

Bigger difference in centroids between 1st and 2nd pass.
Why the flipping between 1st and 2nd pass?
(Not always correlated with odd or even number of corrresponding pbar transfers)

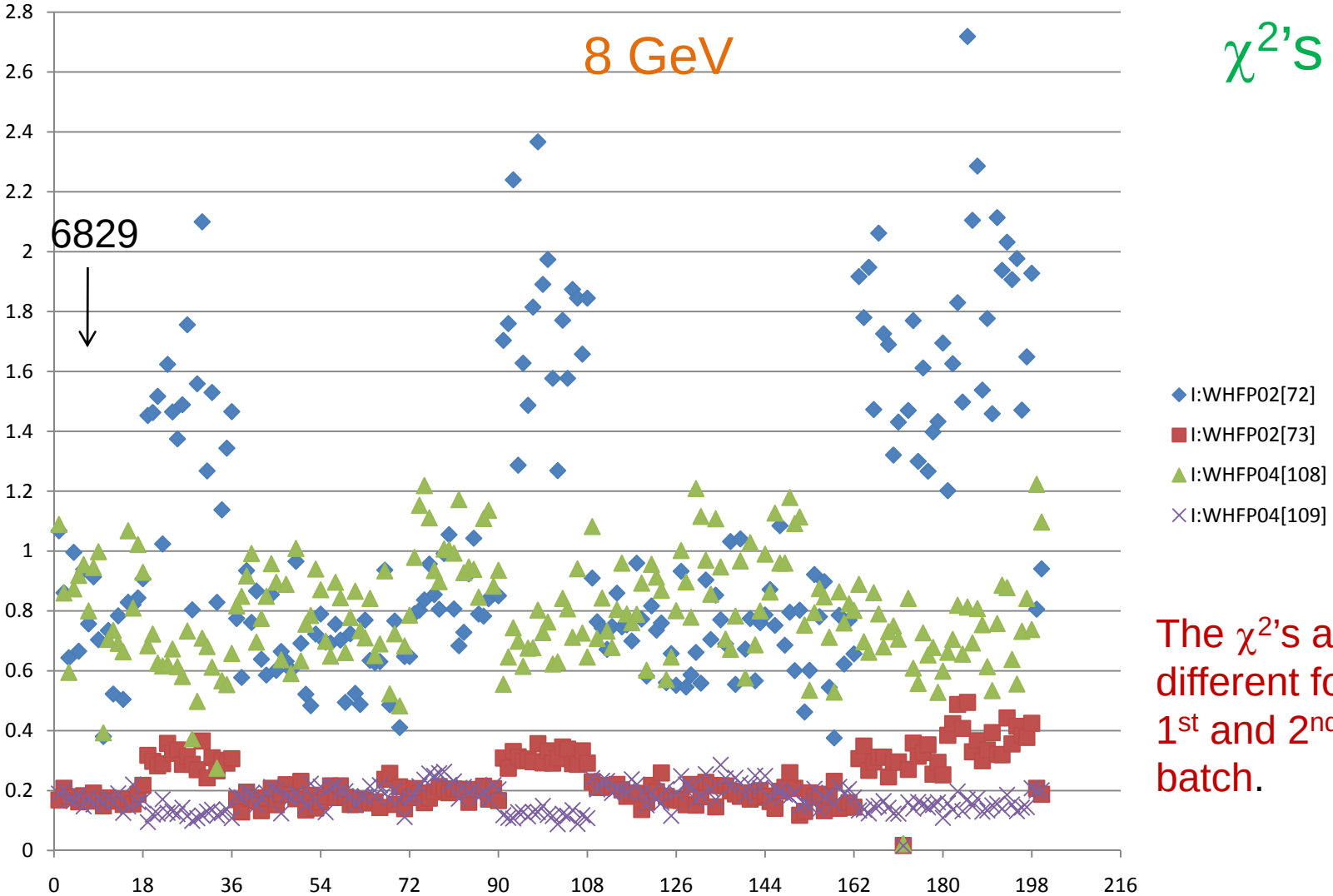
Transfer number (18 per store with two bunches each)

Stores 6931-6944 (Mar. 26-Mar. 30, 2009)



Transfer number (18 per store with two bunches each)

Stores 6792-6829 (Feb. 10-Feb. 23, 2009)

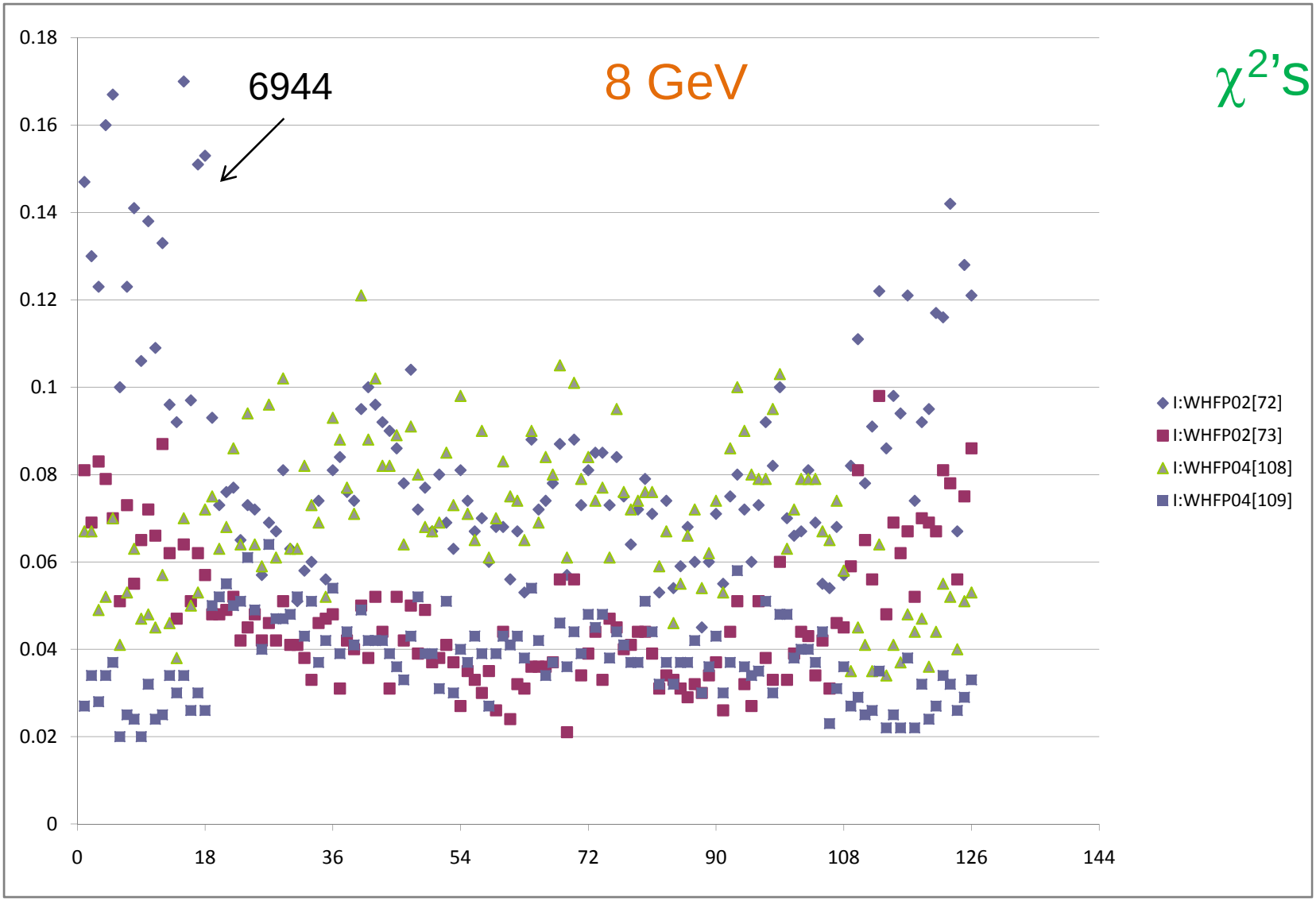


χ^2's of fit

The χ^2's are quite different for the 1st and 2nd bunch/ batch.

Transfer number (18 per store with two bunches each)

Stores 6931-6944 (Mar. 26-Mar. 30, 2009)



Transfer number (18 per store with two bunches each)

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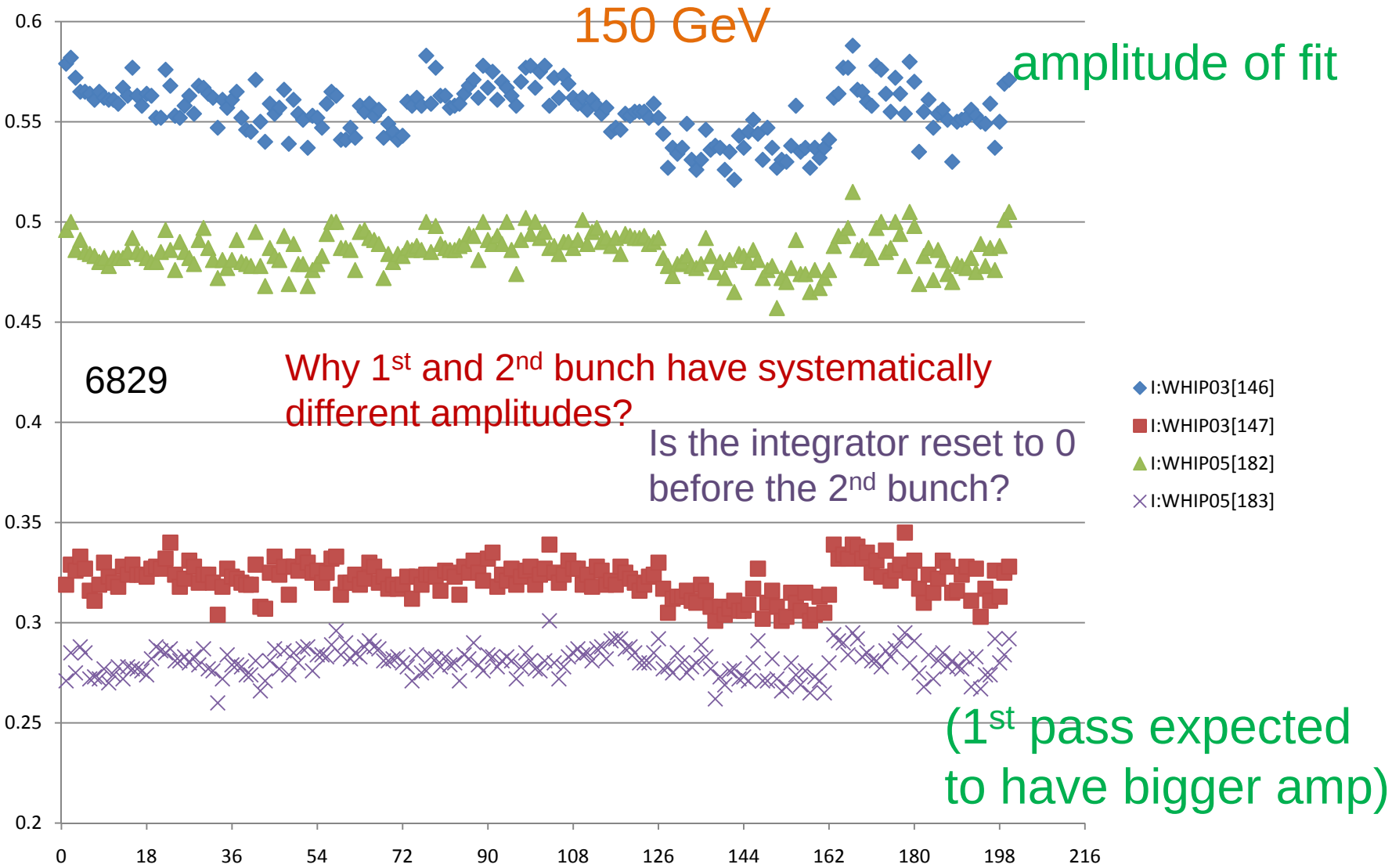
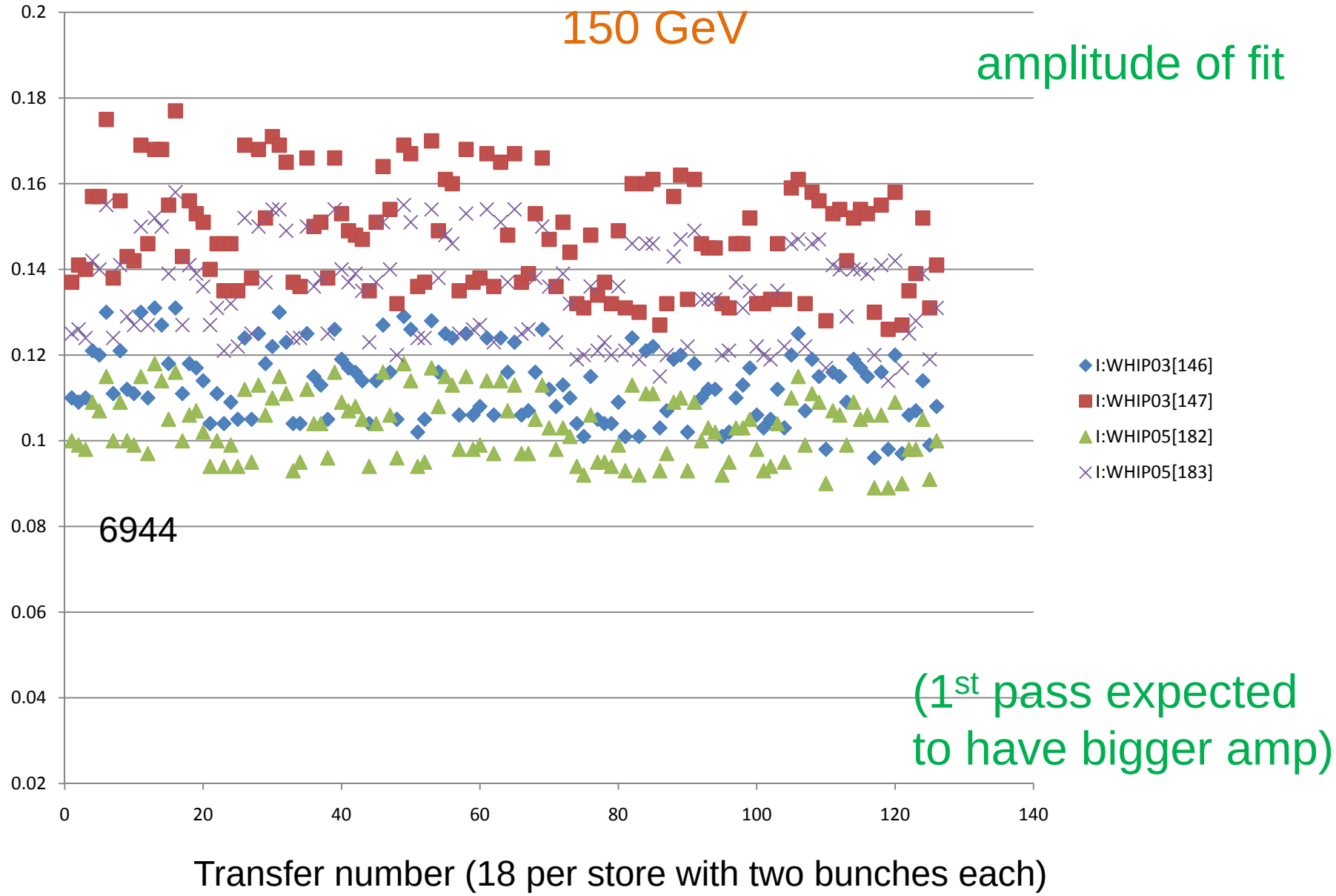
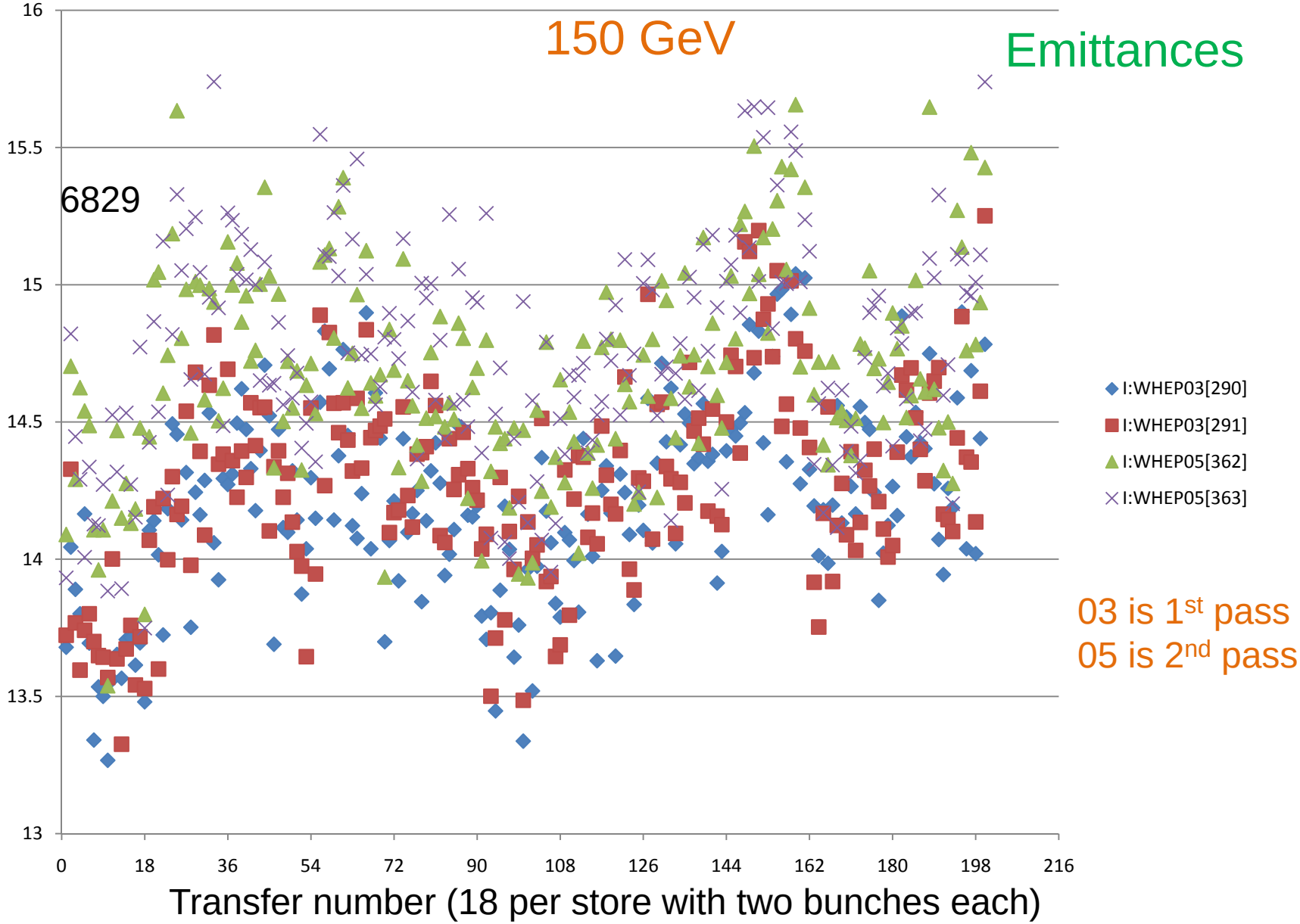


Transfer number (18 per store with two bunches each)

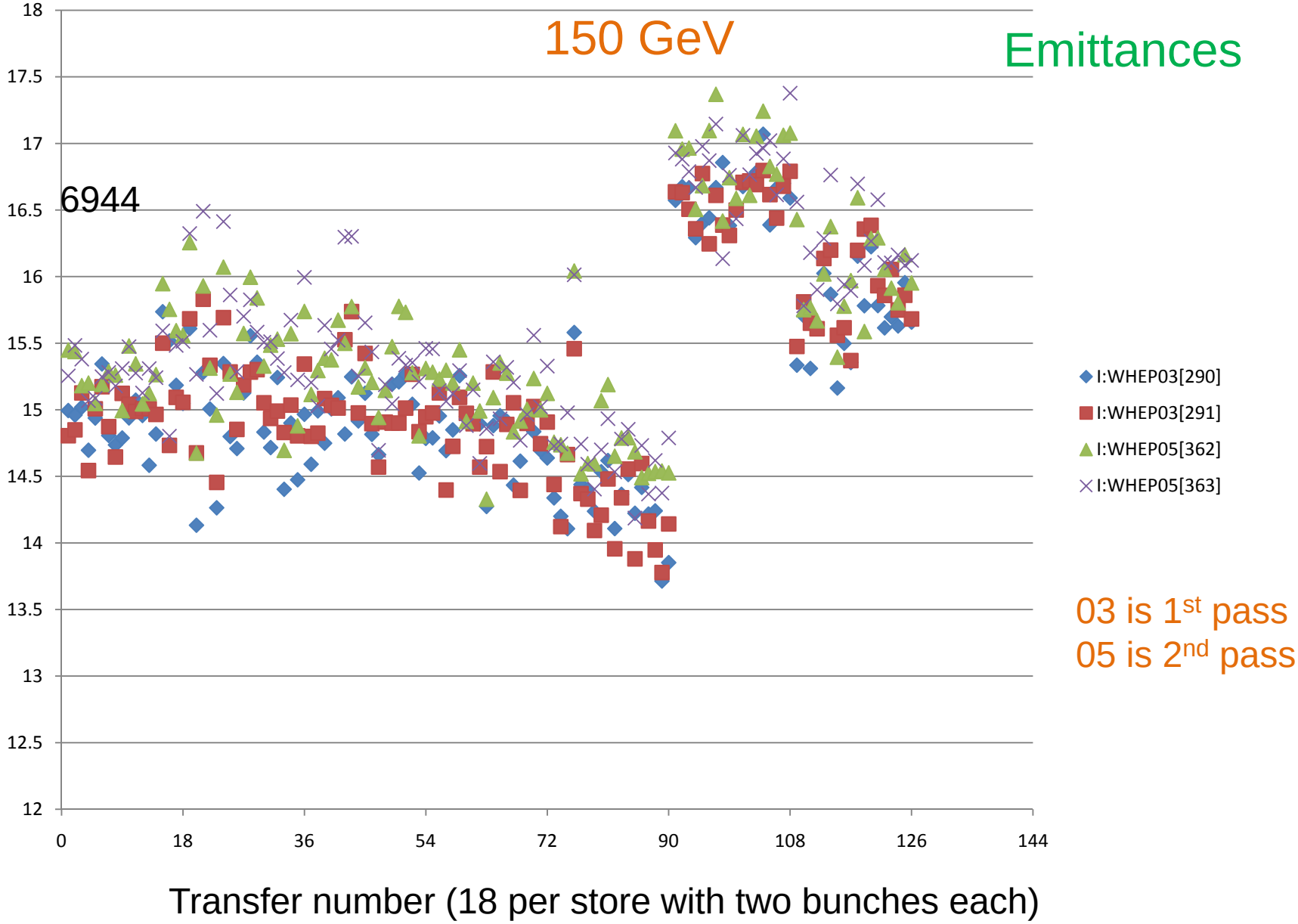
Stores 6931-6944 (Mar. 1-Mar. 30, 2009)



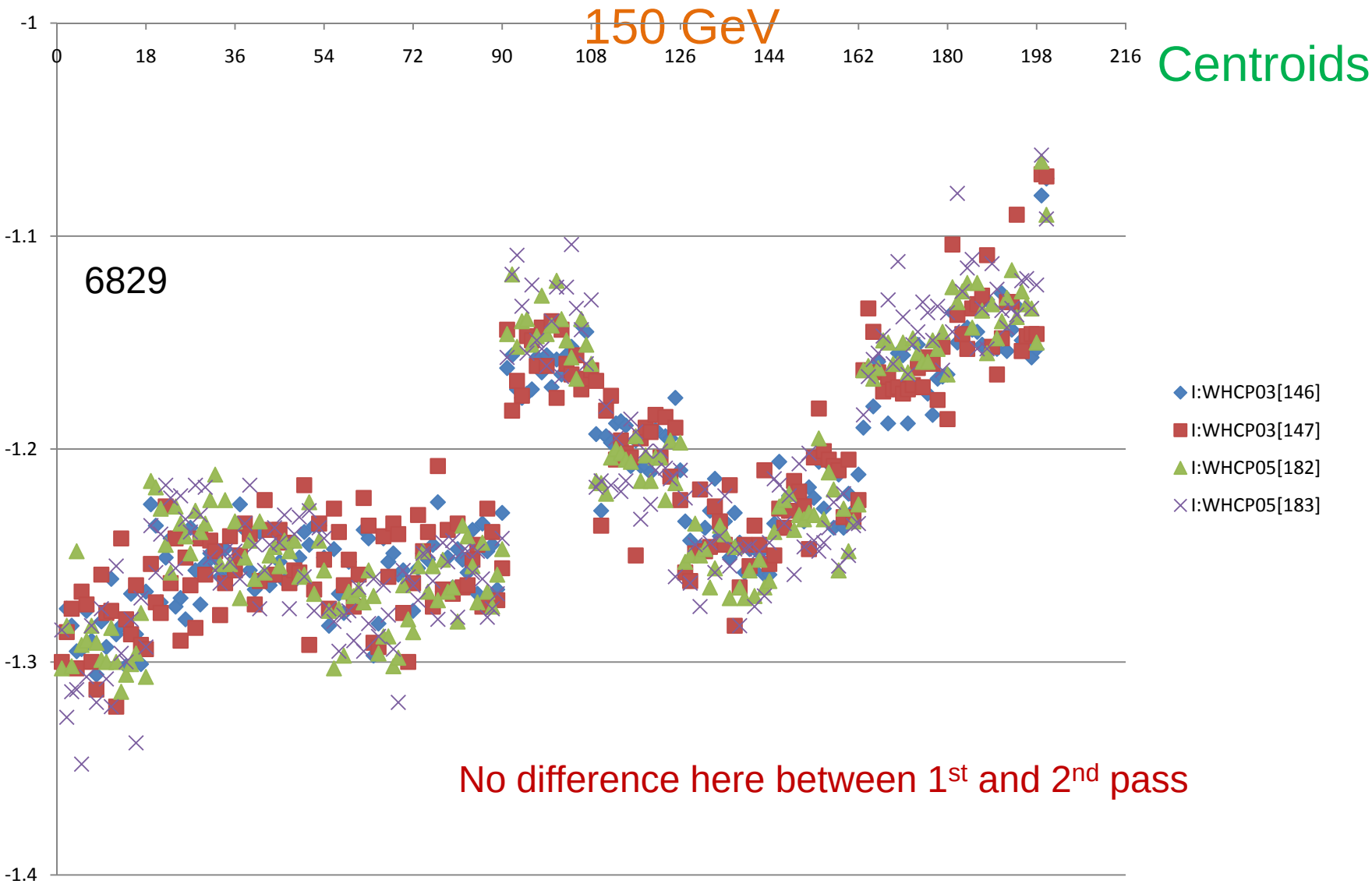
Stores 6792-6829 (Feb. 10-Feb. 23, 2009)



Stores 6931-6944 (Mar. 1-Mar. 30, 2009)



Stores 6792-6829 (Feb. 10-Feb. 23, 2009)



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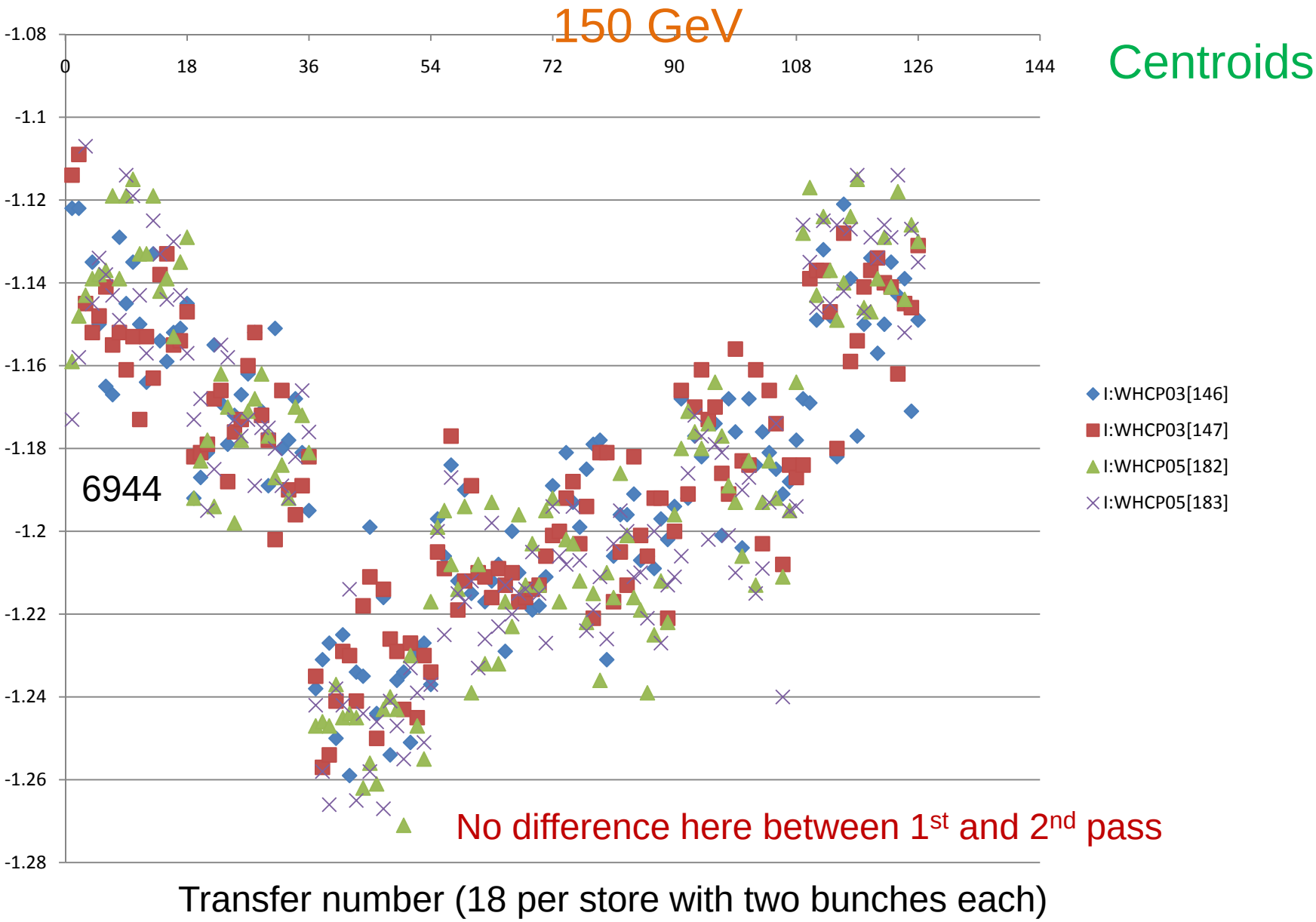

Conclusions

- The fit amplitudes which were significantly different between the 1st and 2nd proton batch at both 8 and 150 GeV are much closer after the integrator hold time reduction on March 3 and additional adjustments on March 20th. The amplitudes are much smaller now though than they used to be.
- The sigmas, emittances and centroids have been exhibiting similar differences between the 1st and 2nd batch in the February and March comparisons. The χ^2 differences at 8 GeV for the fits of the 1st and 2nd batch have been now improved.