e+A Diffraction Status & Feedback to EIC

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Motivation

- J/ψ coherent diffraction from e+A is important
  - "Direct" measure of G(b)
  - Can be used w/ ϕ diffraction to get at saturation.
- Need to veto incoherent diffraction and measuring "A-1" remnants will help with that.
  - Only possible at IP8, if even there.
- See my talk from May 19 for more detail:
  https://indico.bnl.gov/event/11893/contributions/49958/attachments/34630/56228/2021-05-19-Diffraction-Baker.pdf

IP8 plots from Rolf's talk (from Alex Jentsch)

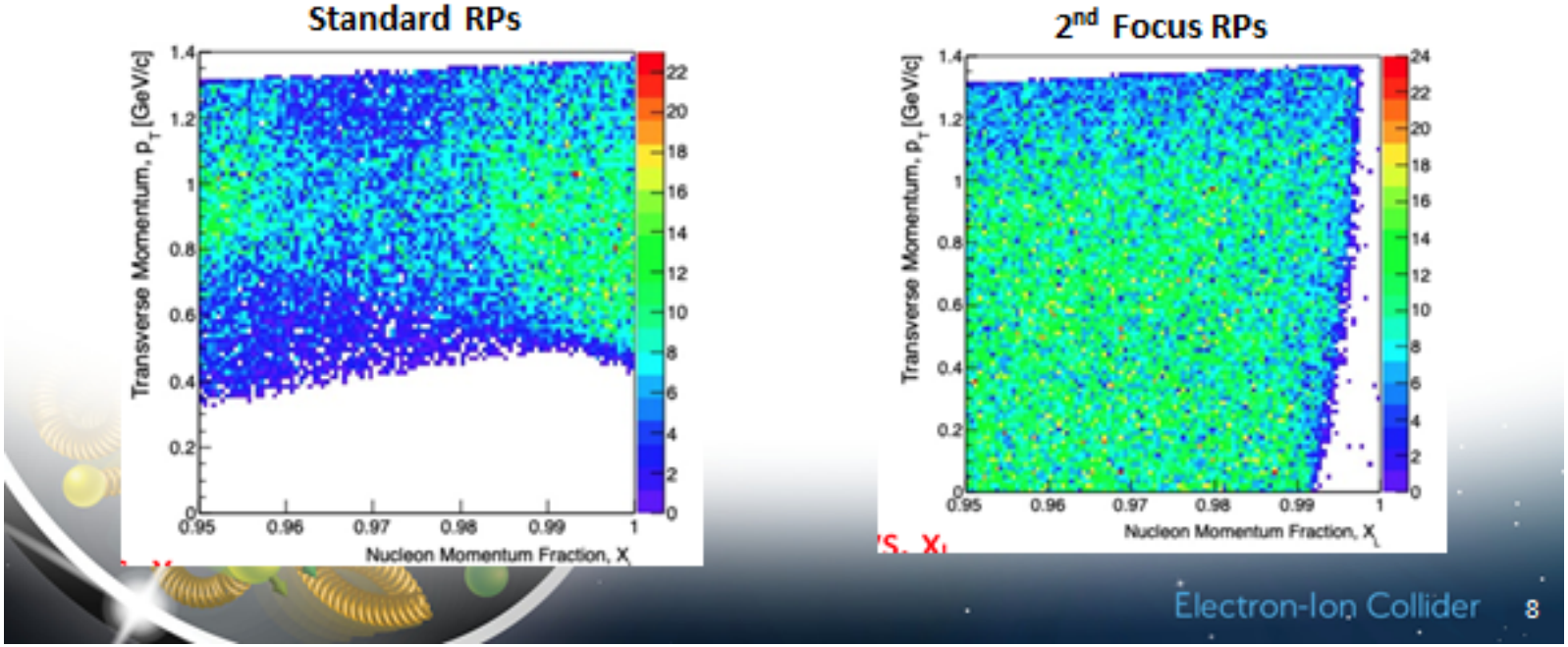
https://jleic-docdb.jlab.org/cgi-bin/private/DisplayMeeting?sessionid=269 F 7/2

Status of IR-8

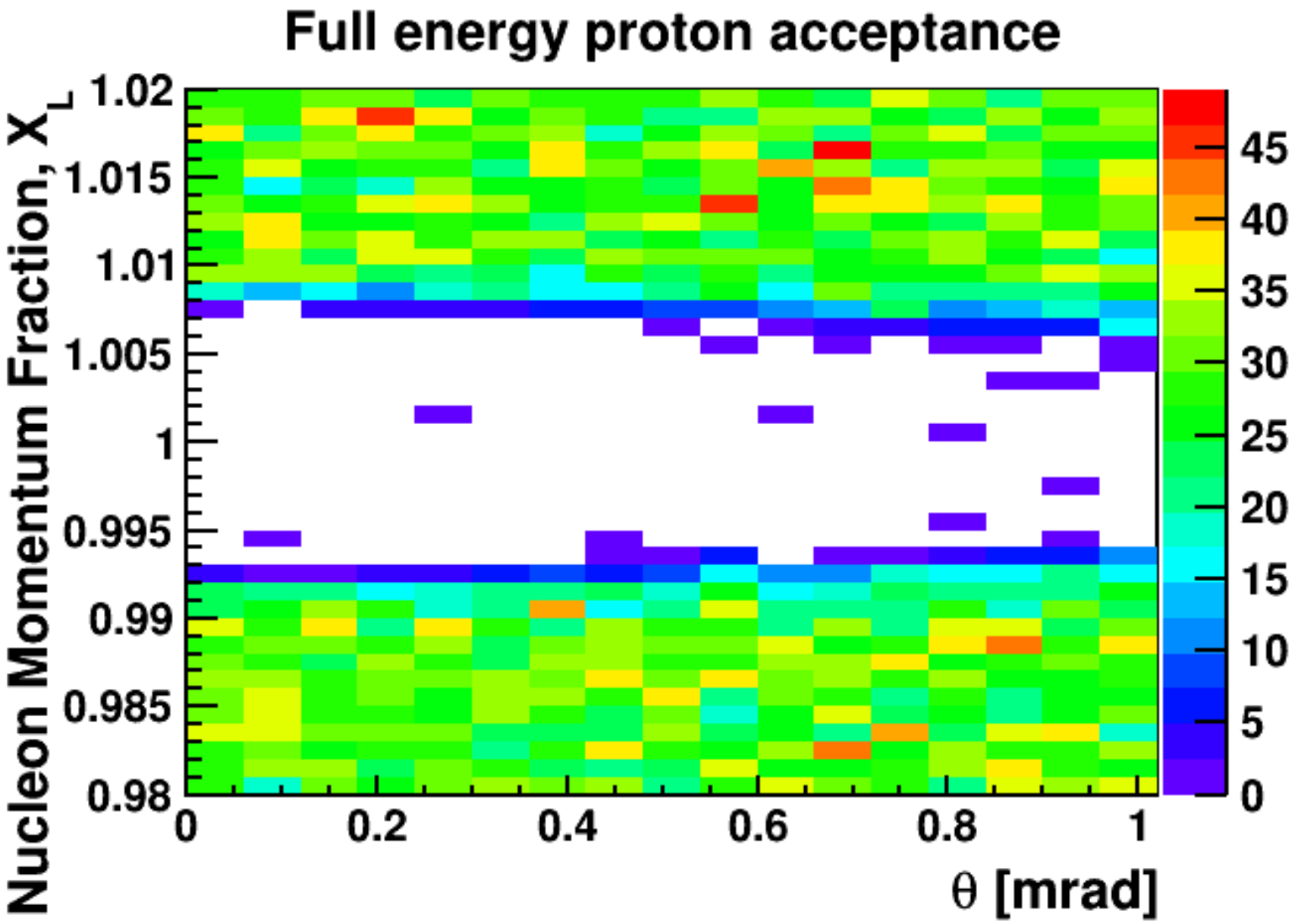
- All material to simulate physics at 18 GeV x 275 GeV has been posted at https://indico.bnl.gov/event/10974/contributions/51160/
  - Detailed Read-Me how to use all the provided information

x_L acceptance at IP-8:

the most recent optics info was used



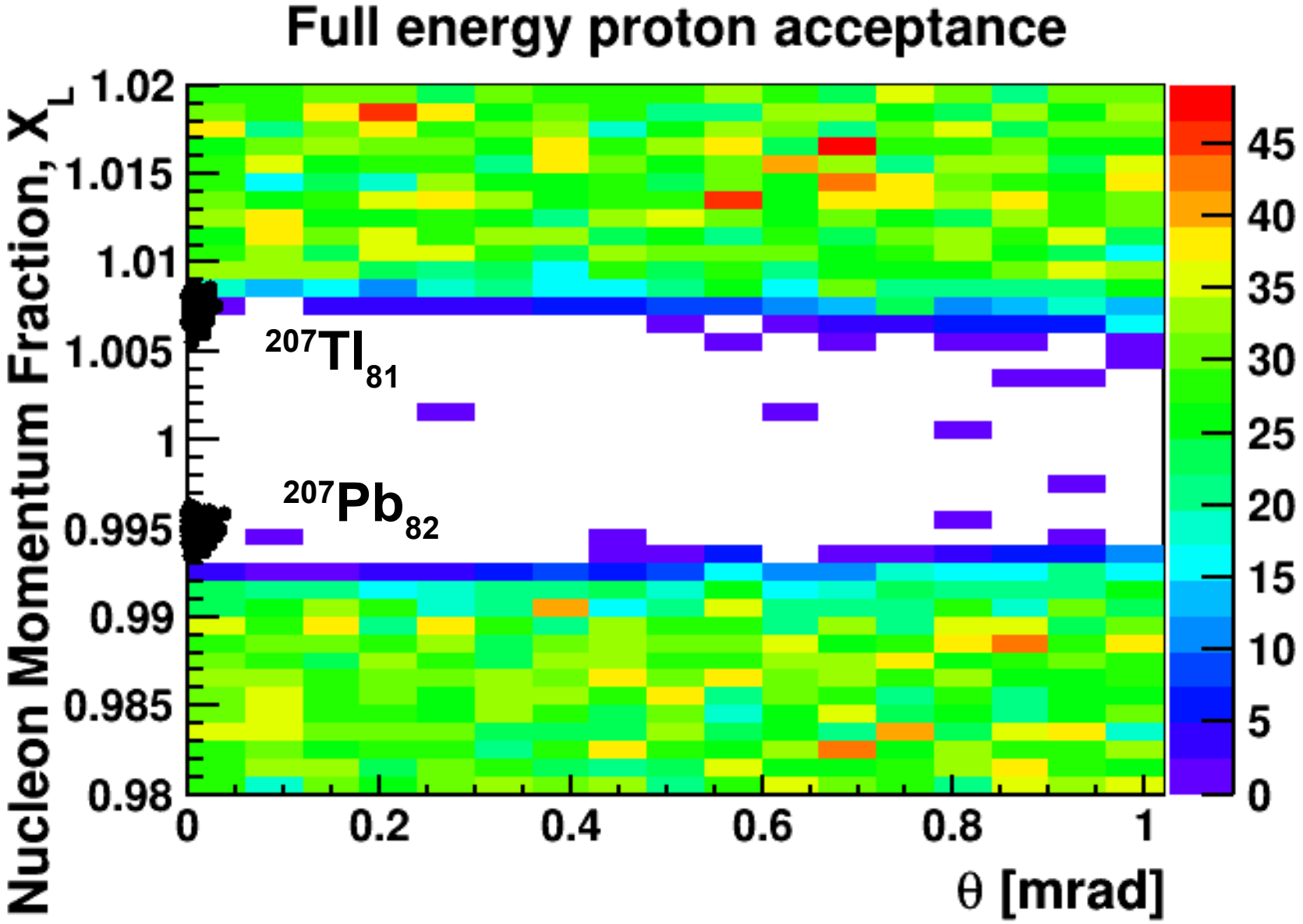
Generalization by Alex to x_L >1



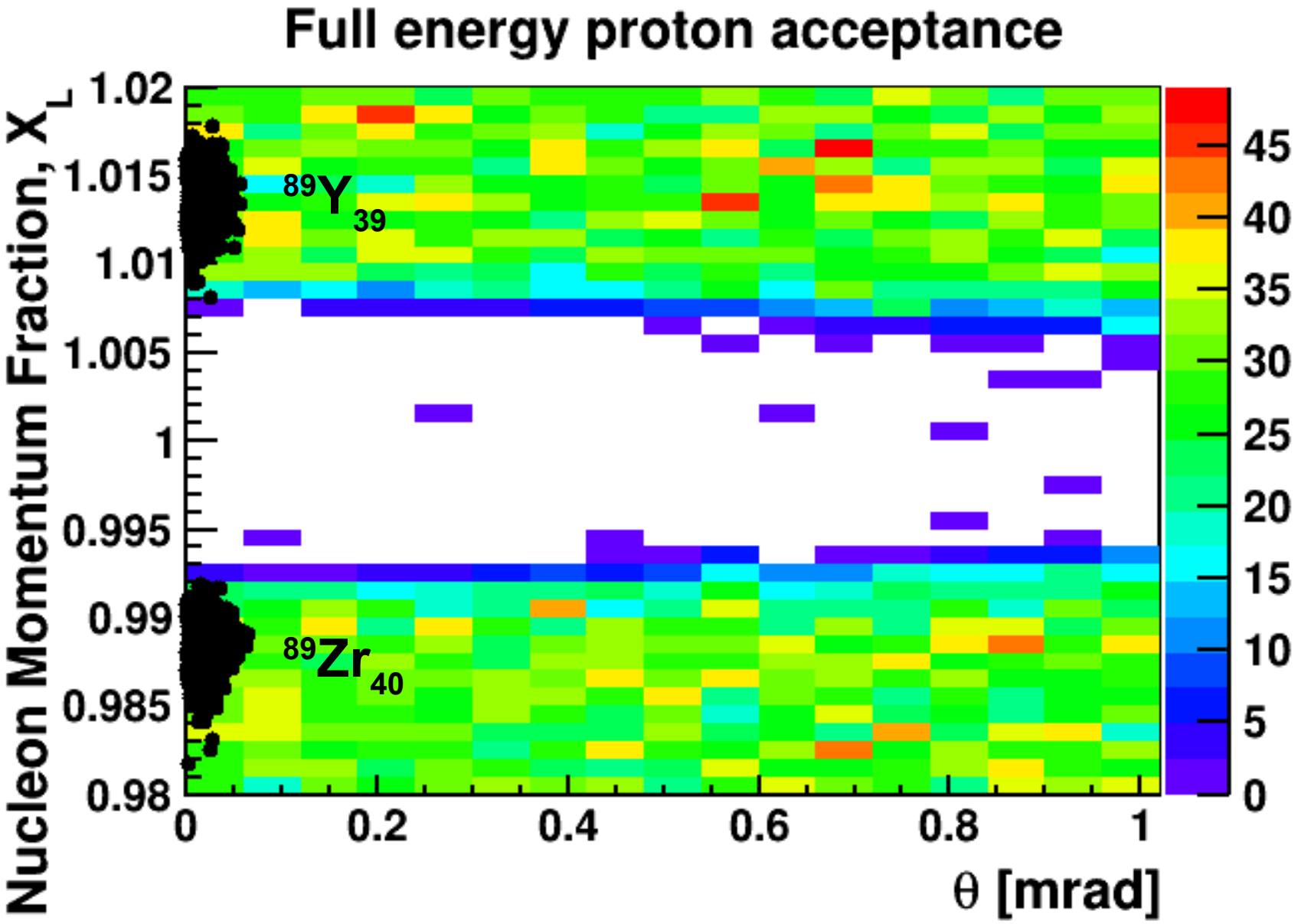
What about A-1 remnants in e+A?

- Run BeAGLE – 100k events of J/ψ incoherent diffraction. O(10k) with A-1.
- IF beam conditions are the same, then $x_L=(p_z/Z)/275$ GeV and θ acceptance should be the same.
- This will need to be checked, but it gives us a "first look" at e+Pb and e+Zr.
- Note: We need to learn to make these plots in fun4all yesterday – literally. Thanks to Alex for stepping in!

A-1 particles from e+^{208}Pb J/ψ diffraction



A-1 particles from e+^{90}Zr J/ψ diffraction



Conclusions regarding A-1

- First look:
  - ^{207}Pb misses RP – no protection vs. n inefficiency
  - ^{207}Tl is on the edge – protection vs p inefficiency?
  - Zr A-1 looks great! (Thanks Pawel Turonski...)
- More study is needed.
  - Use fun4all & understand 10σ ourselves.
  - e+A vs. e+p. Different 10σ RPSF position?
  - Different running conditions with more favorable 10σ RPSF position?
  - Actual impact on vetoing (Pb & Zr)