

Proton detection threshold and efficiency

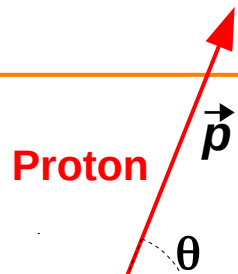
Proton generated flat in $0.05 < p \text{ (GeV/c)} < 2.0$, $-1 < \cos\theta < 1$, along all target length

Checked which reached the most inner TPC gas layer.

NB: what I call “efficiency” in these slides is a misuse of language: it just represent the probability for the proton to reach the most inner gas layer of the mTPC.

mTPC most up-to-date geometry (Marco)

mTPC inner wall: 2 μm kapton



Between target and mTPC: ^4He gas, 0.1 atm

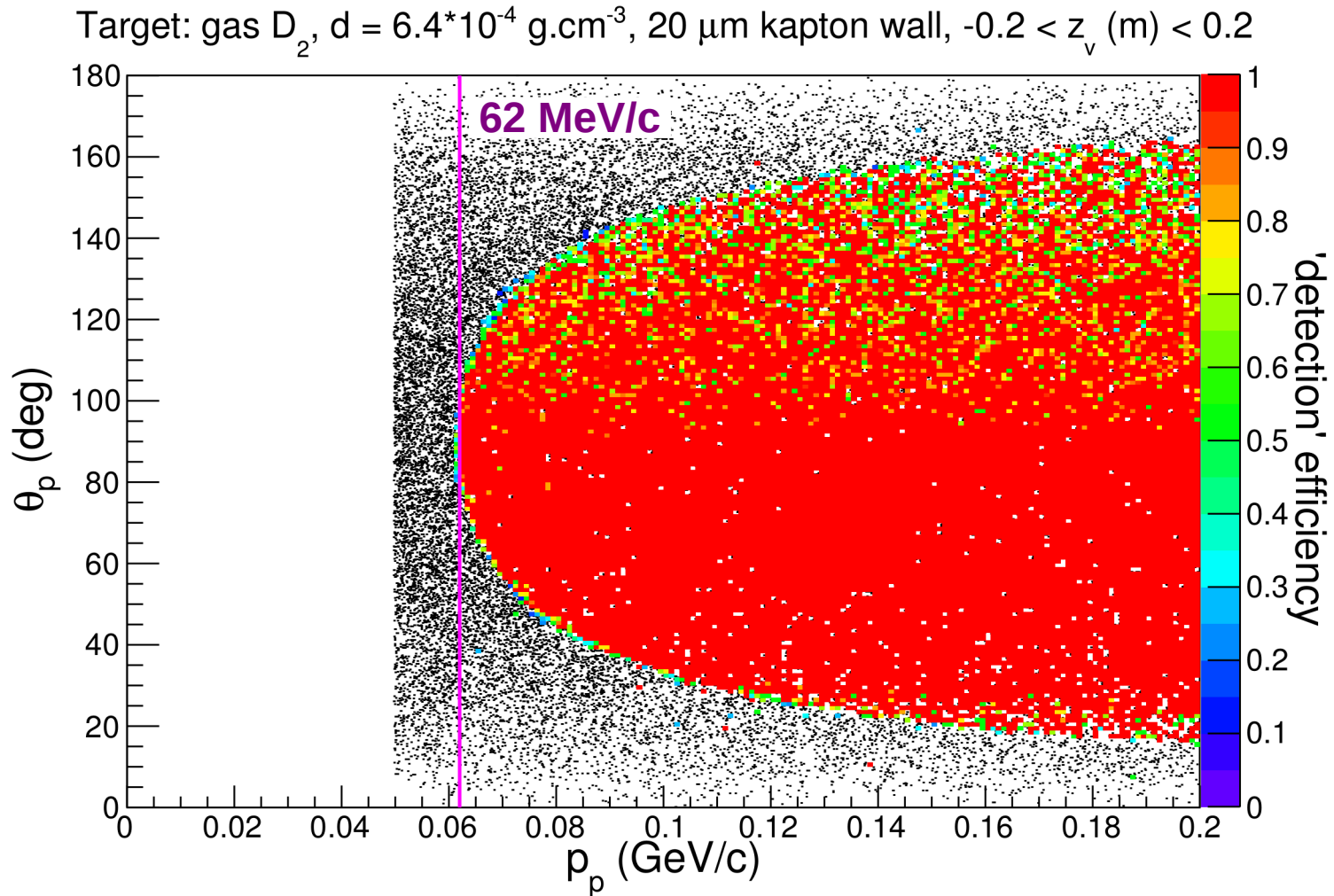
Target wall: 20 μm kapton

Target: D_2 gas, $6.4 \cdot 10^{-4} \text{ g.cm}^{-3}$

mTPC gas: ^4He , 0.1 atm

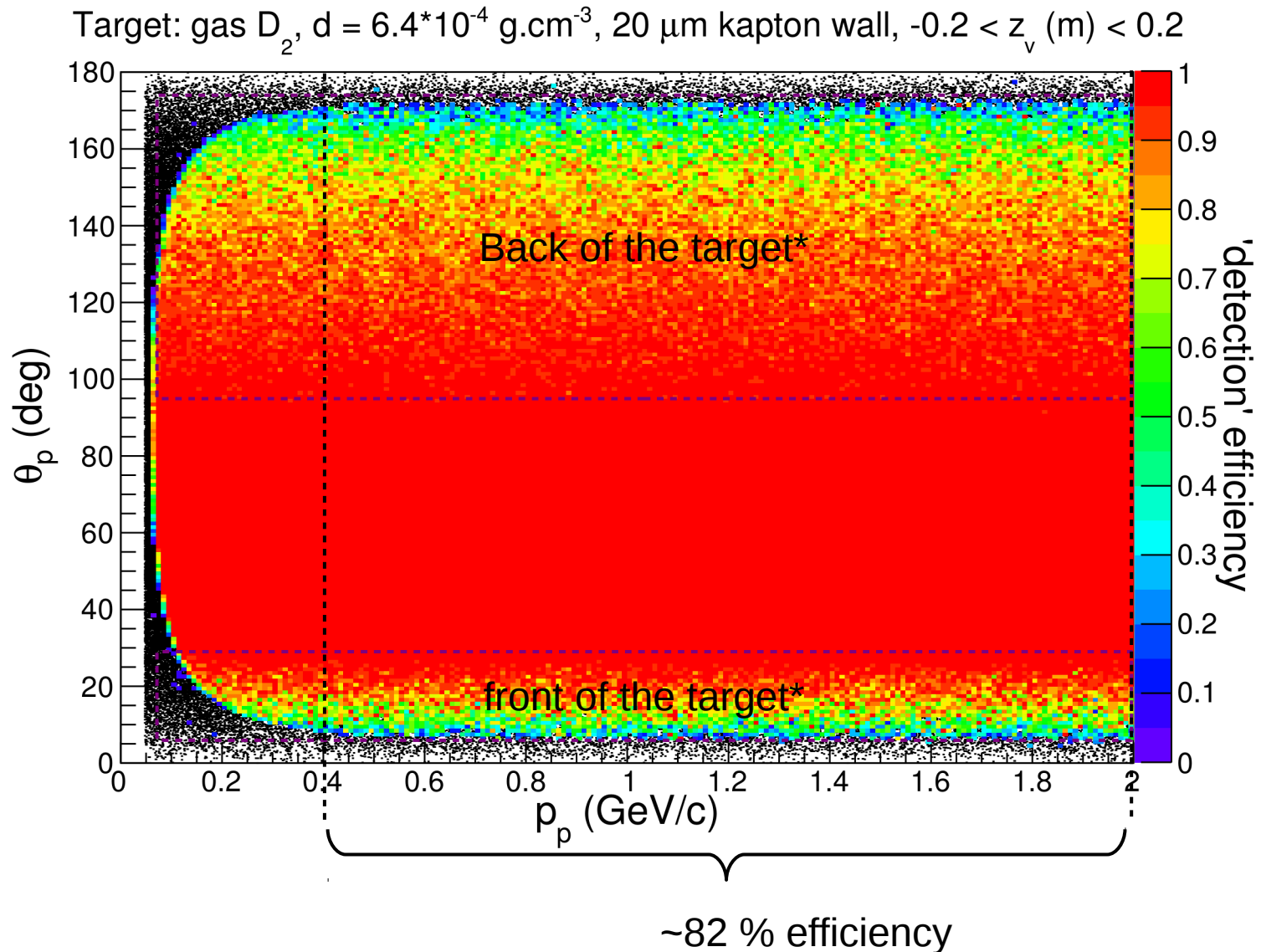
(for practical reasons, I have made the most inner layer denser (1atm))

“Efficiency” : angle Vs momentum : Zoom at low momentum



Proton threshold: 62 MeV/c
(with 20 μm kapton target wall and
Target gas: D_2 , $6.4 \cdot 10^{-4} \text{ g.cm}^{-3}$)

“Efficiency” : angle Vs momentum over a wider momentum range



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(*): see next slide

“Efficiency” : angle Vs vertex position

Target: gas D_2 , $d = 6.4 \cdot 10^{-4} \text{ g.cm}^{-3}$, 20 μm kapton wall

