

EPOS - Proton+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

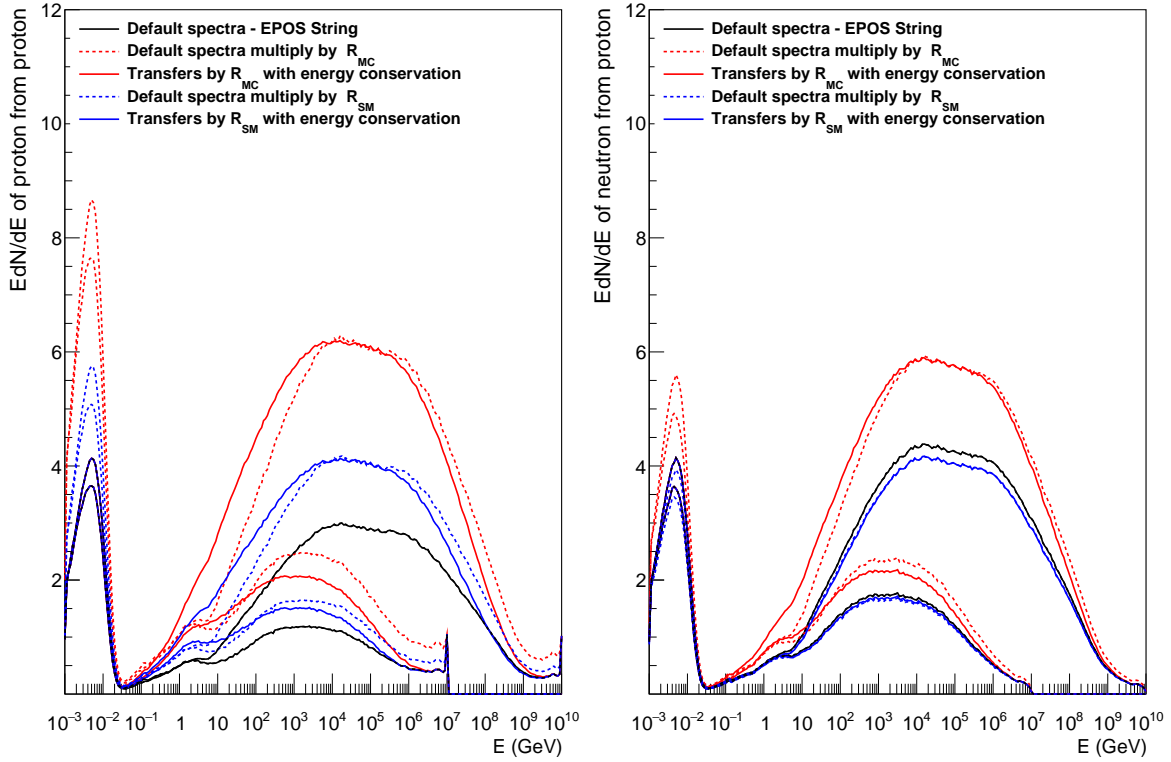


Figure 1: Spectrum of proton (left) and neutron (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation

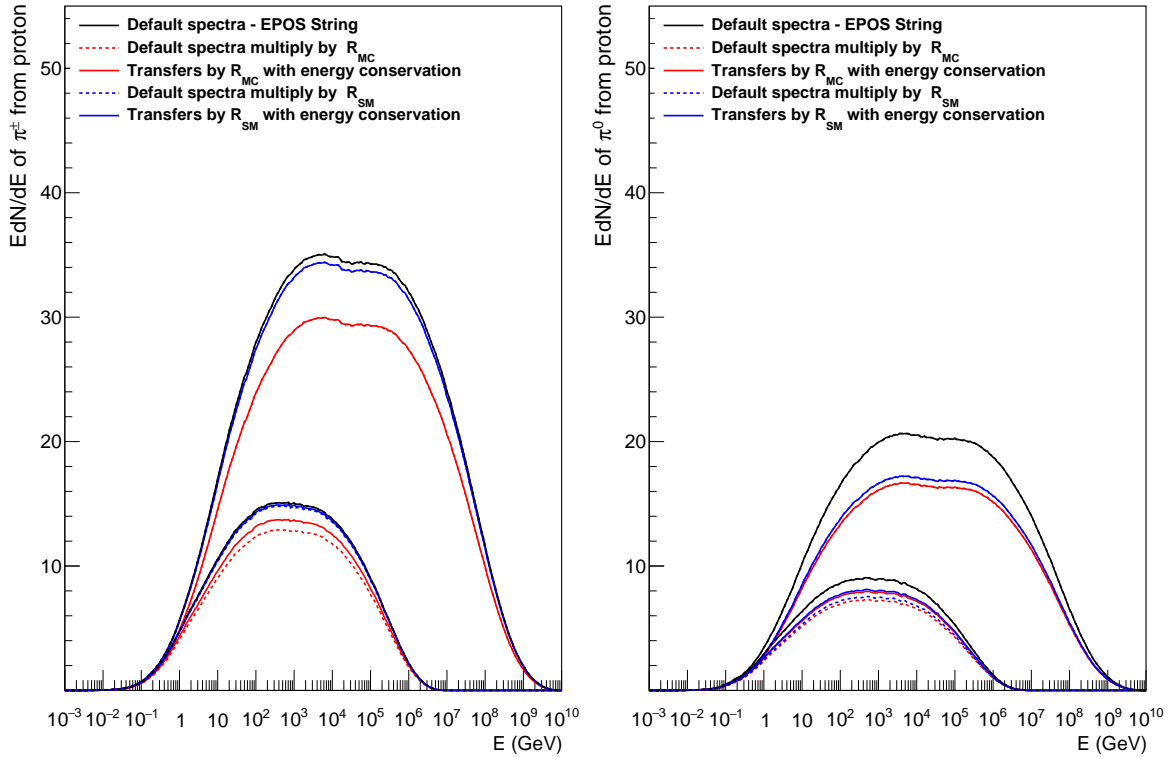


Figure 2: Spectrum of π^\pm (left) and π^0 (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

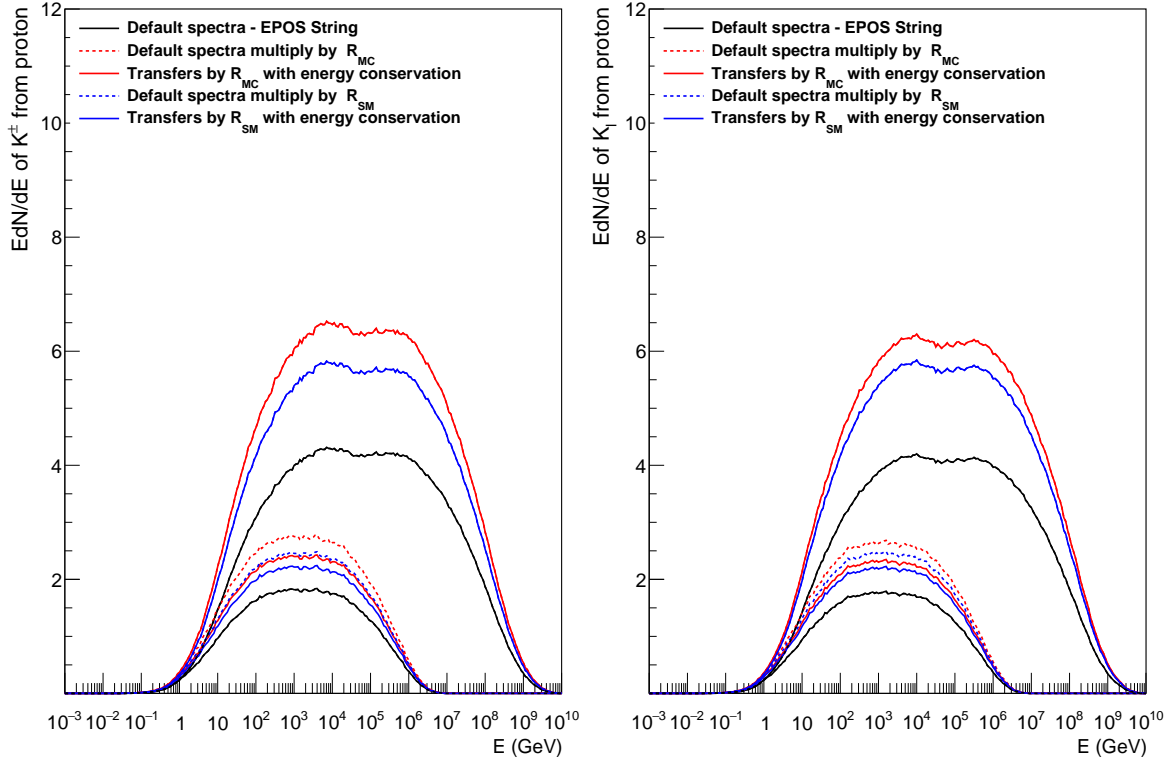


Figure 3: Spectrum of K^\pm (left) and K_l (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

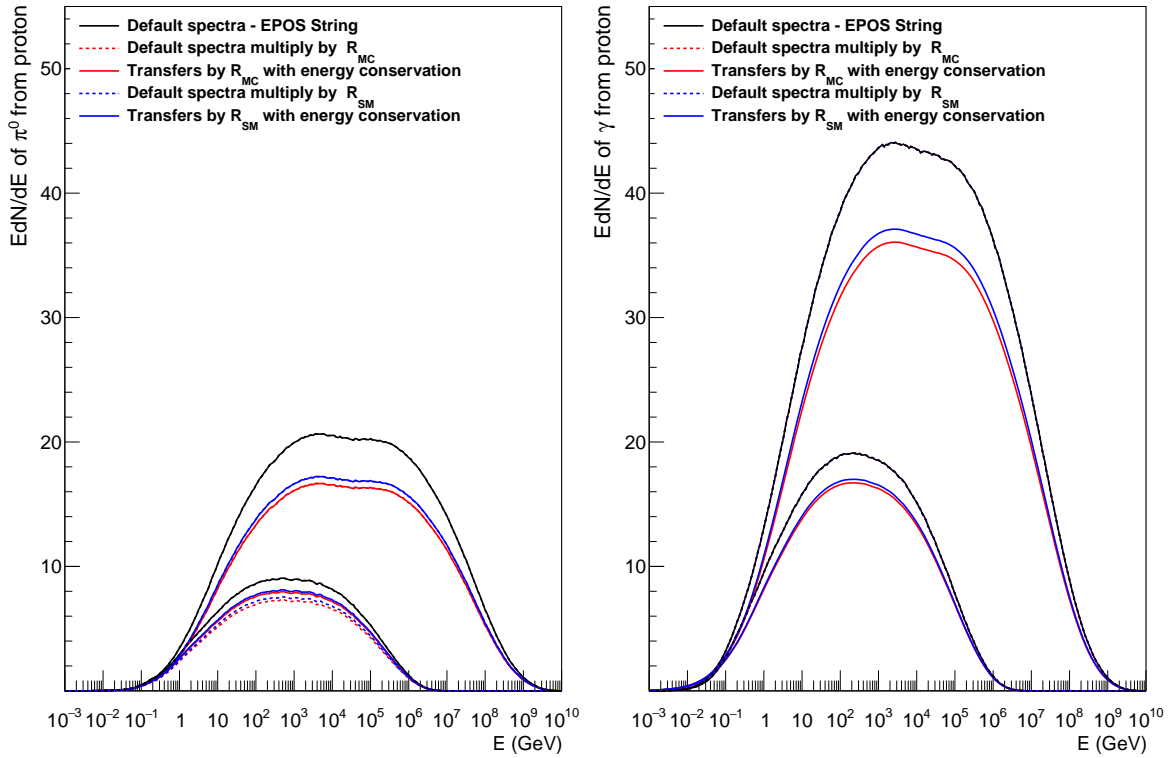


Figure 4: Spectrum of π^0 and gammas for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

EPOS - π^\pm + air interaction

Protons, neutrons and kaons spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to pions. The transfers are made bin by bin from ≈ 0.1 GeV for not change the low energy peak in protons and neutrons, up to $\approx 0.8E_0$, where E_0 is the pion energy in the interaction.

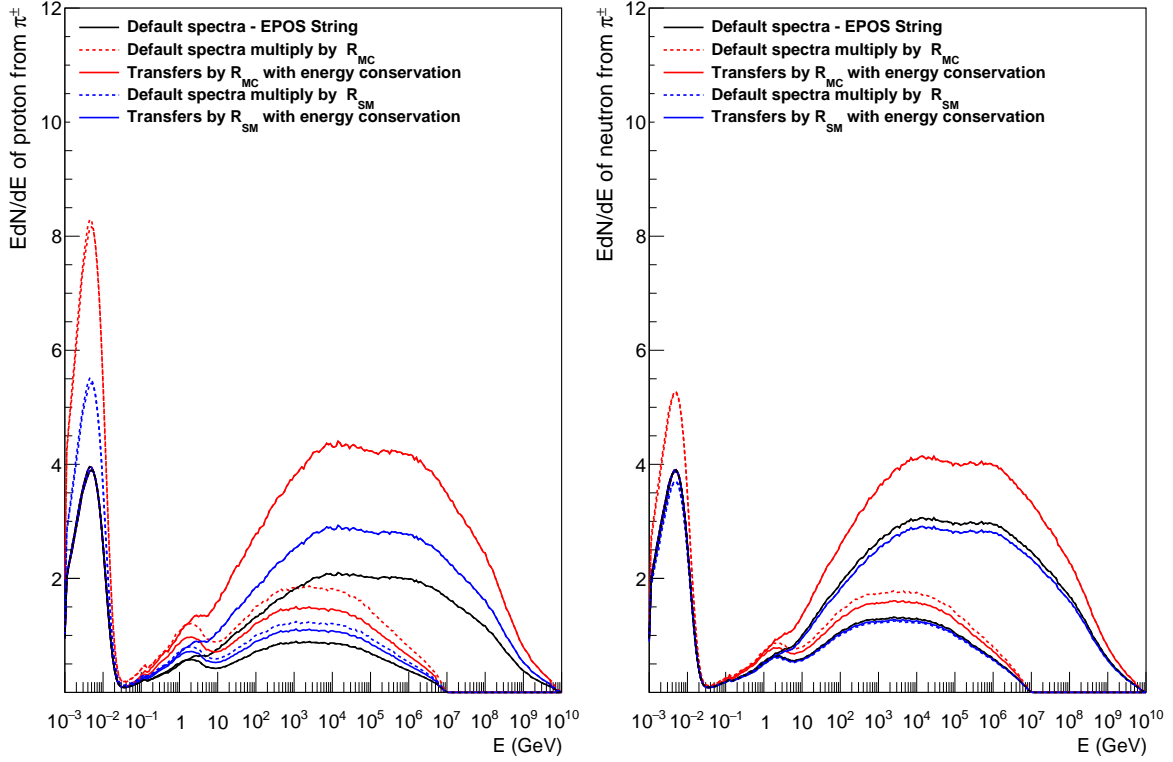


Figure 5: Spectrum of proton (left) and neutron (right) for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

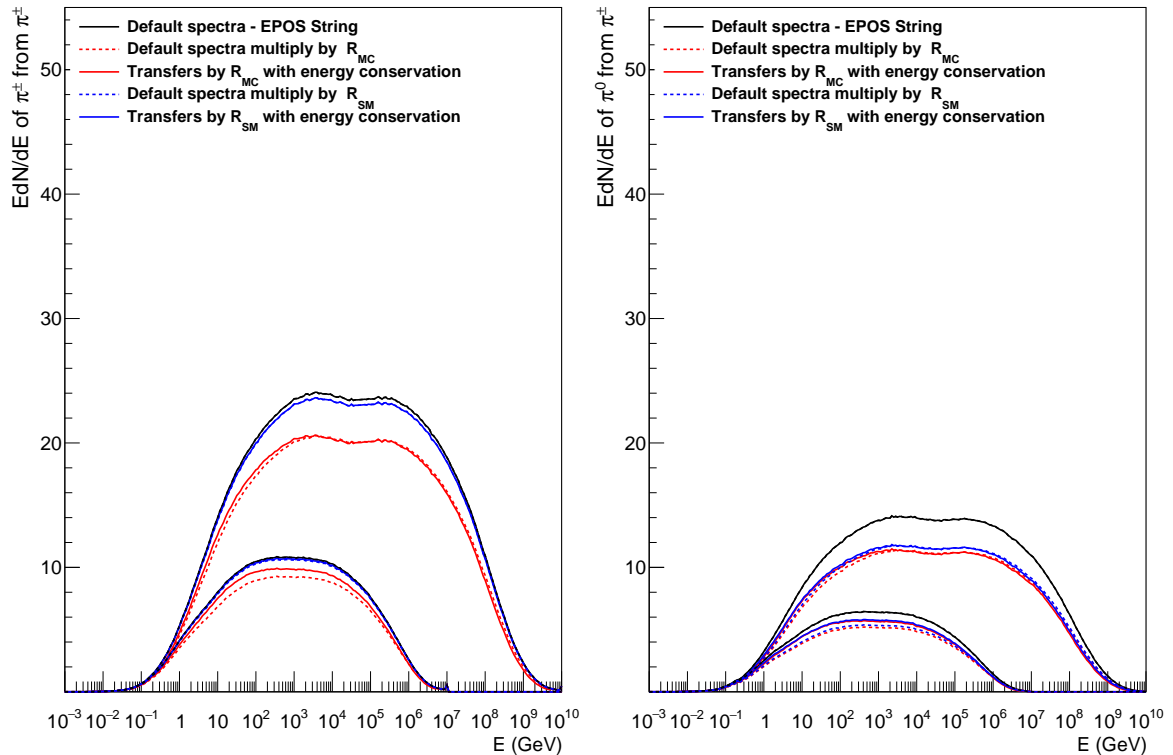


Figure 6: Spectrum of π^\pm (left) and π^0 (right) for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation

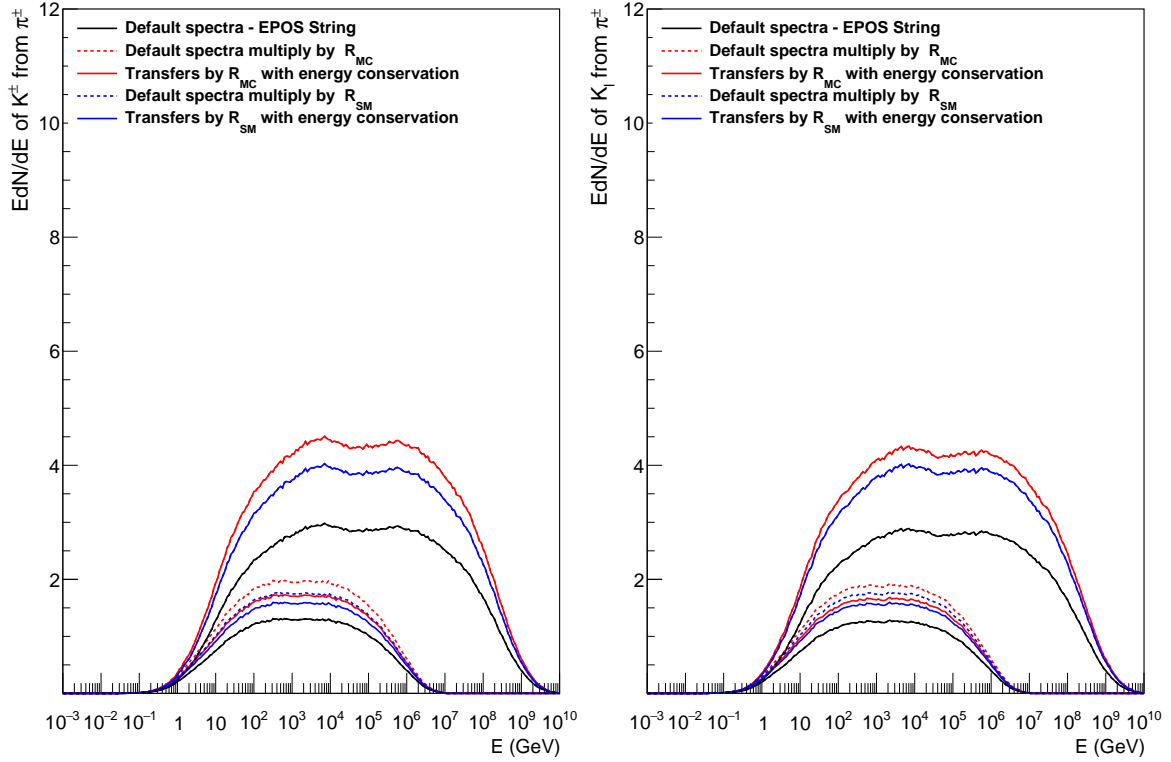


Figure 7: Spectrum of K^\pm (left) and K_l (right) for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

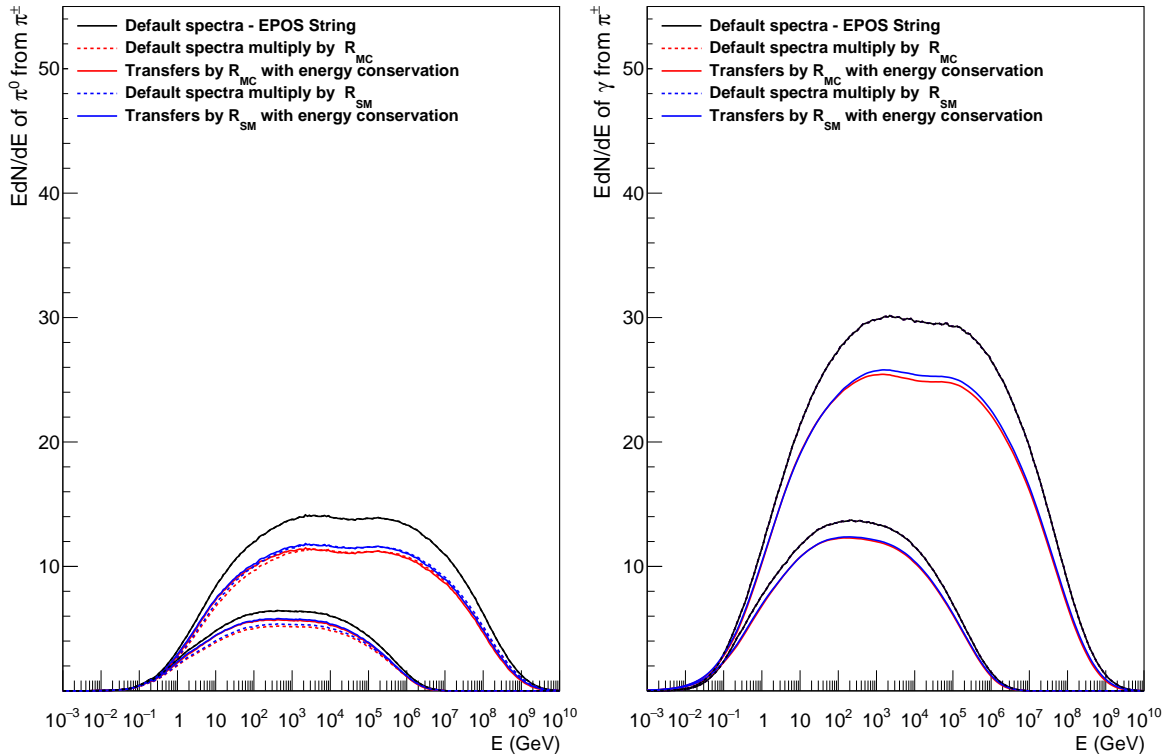


Figure 8: Spectrum of π^0 and gammas for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

EPOS - $K^\pm + \text{air}$ interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV for not change the low energy peak in protons and neutrons, up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

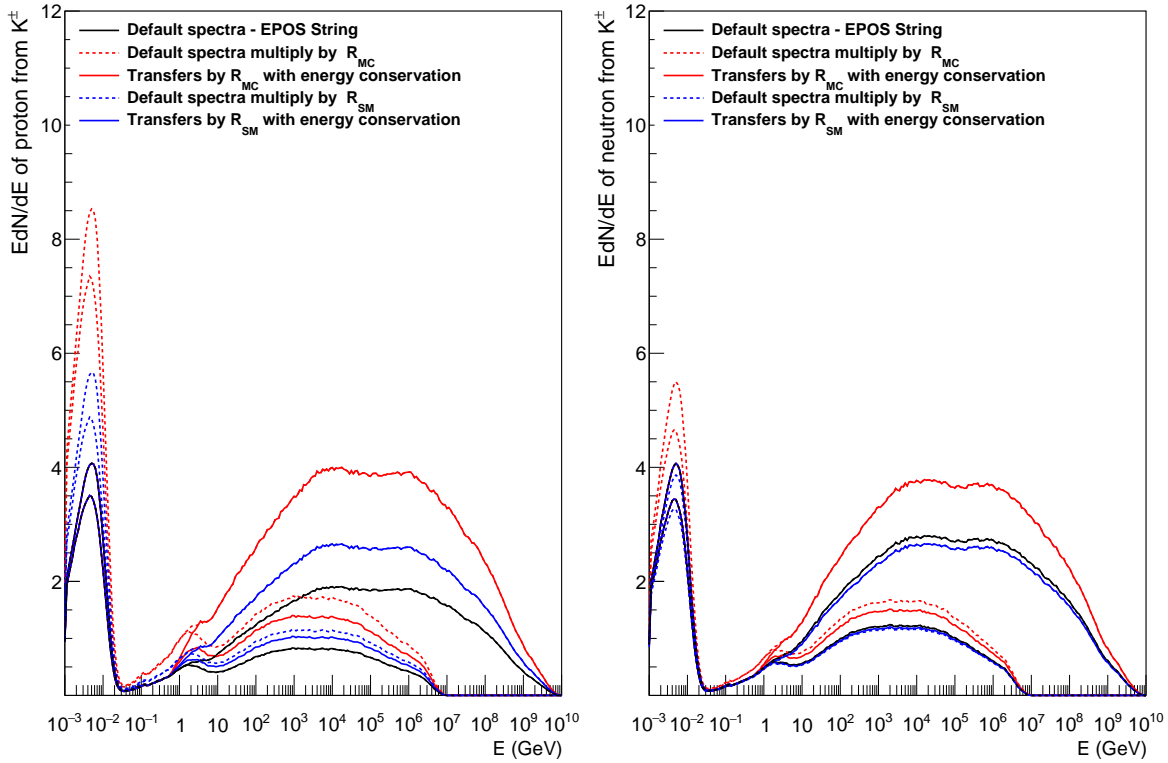


Figure 9: Spectrum of proton (left) and neutron (right) for $K^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

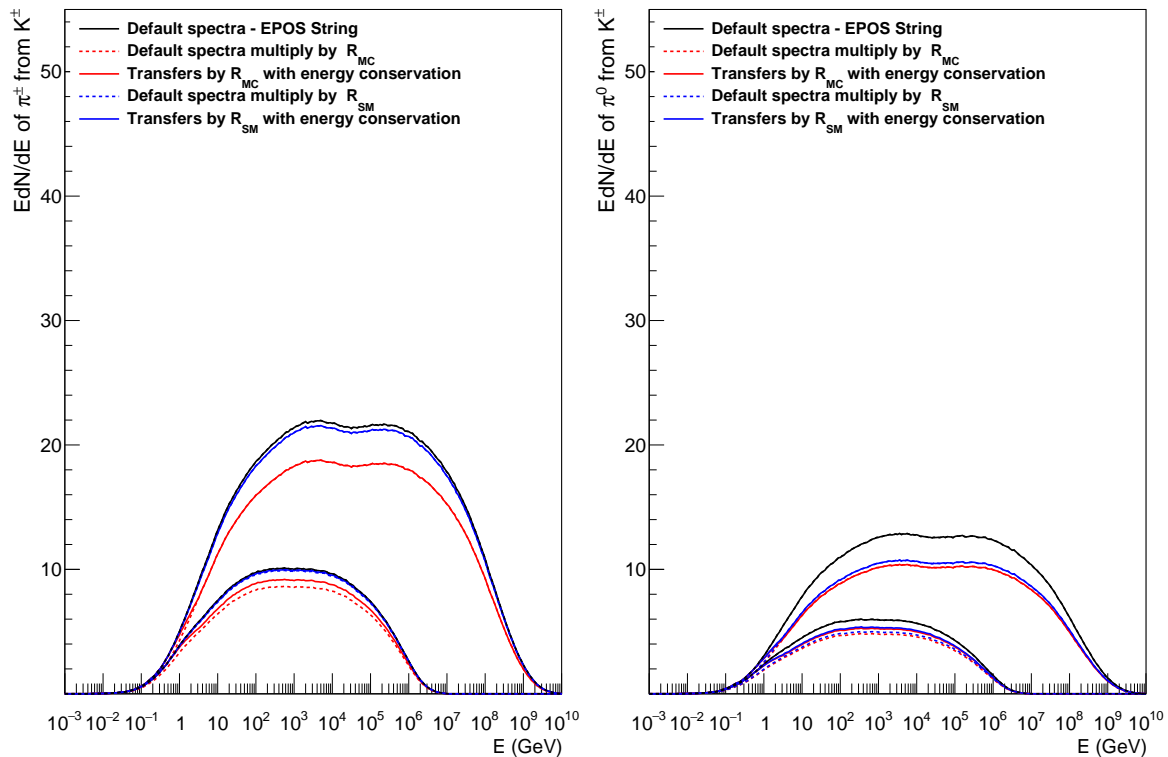


Figure 10: Spectrum of π^\pm (left) and π^0 (right) for $K^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

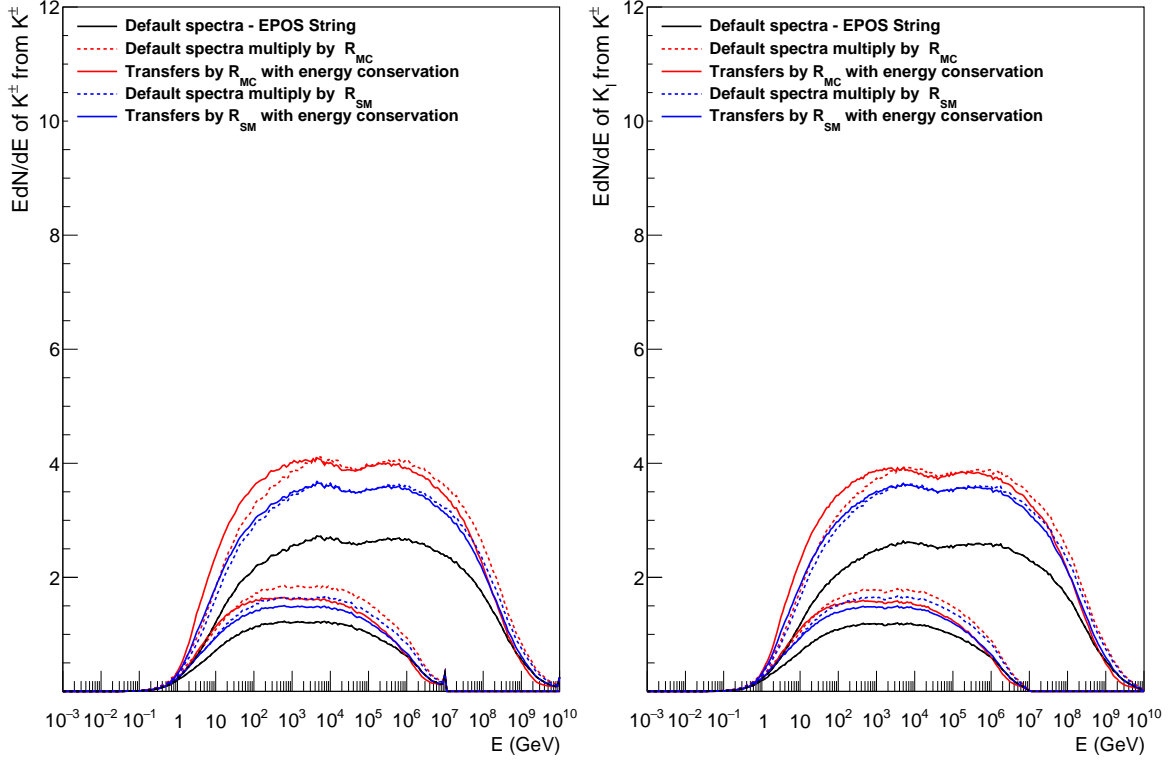


Figure 11: Spectrum of K^\pm (left) and K_l (right) for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation

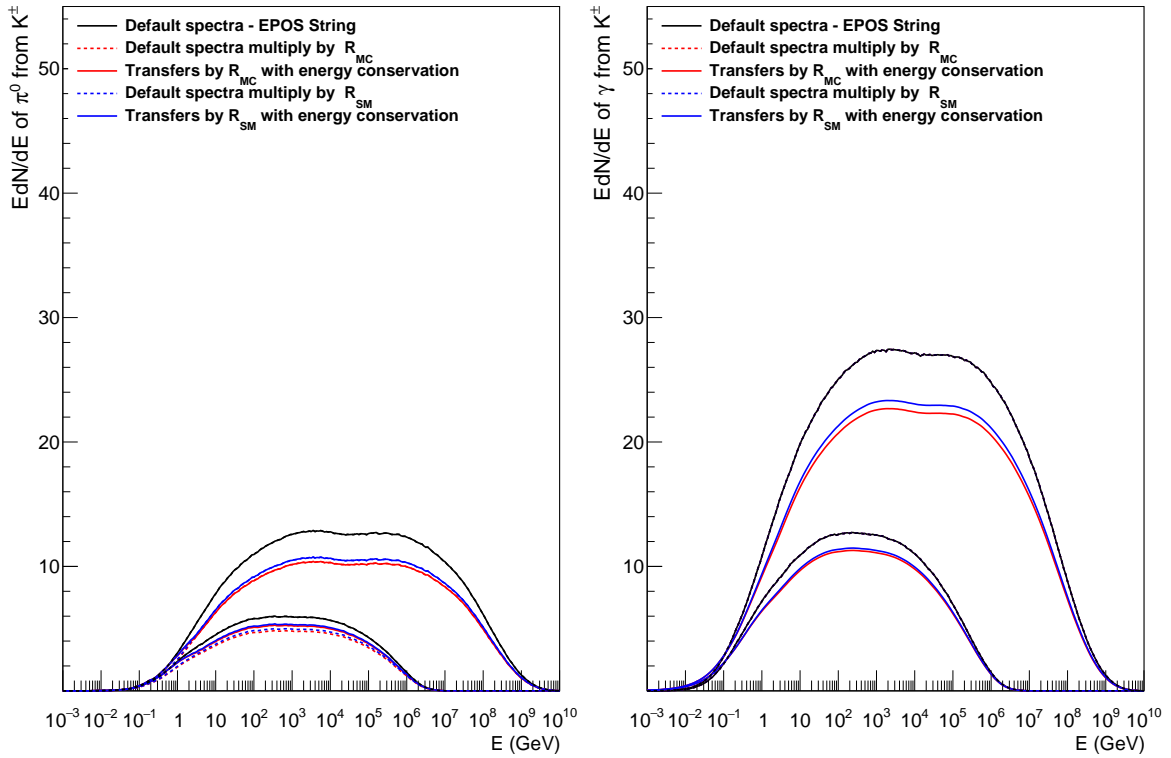


Figure 12: Spectrum of π^0 and gammas for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

EPOS - K_l +air interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV for not change the low energy peak in protons and neutrons, up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

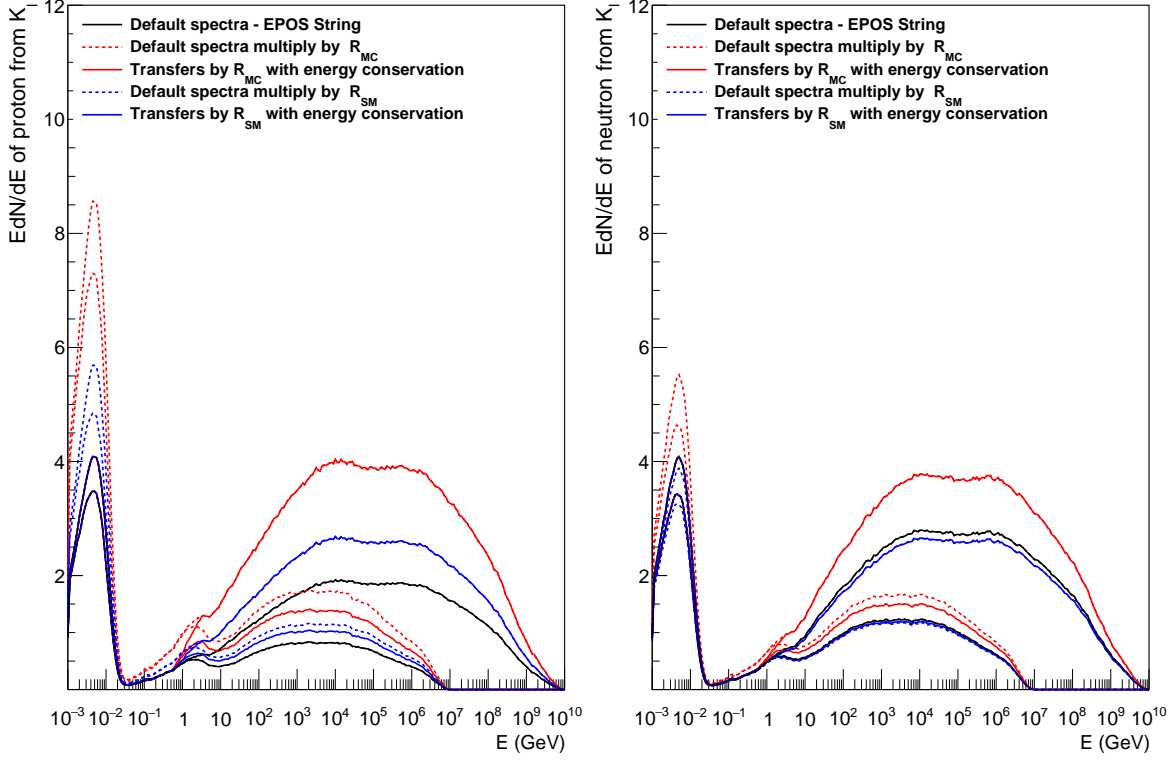


Figure 13: Spectrum of proton (left) and neutron (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

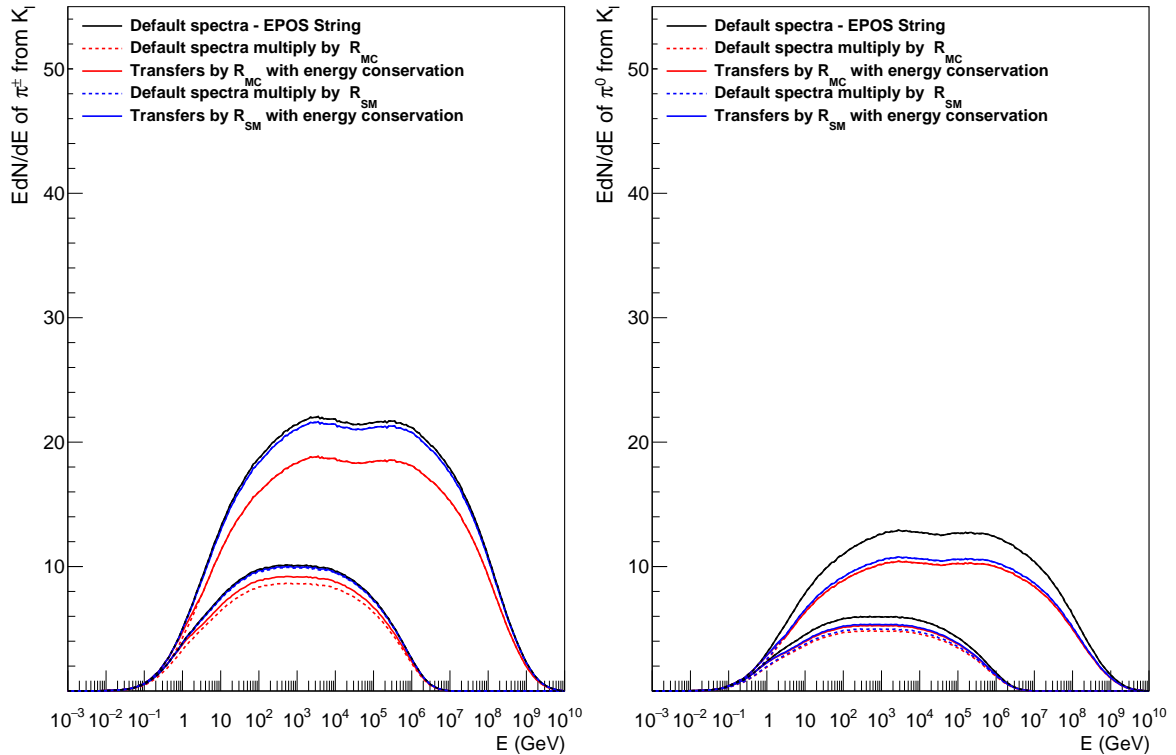


Figure 14: Spectrum of π^\pm (left) and π^0 (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

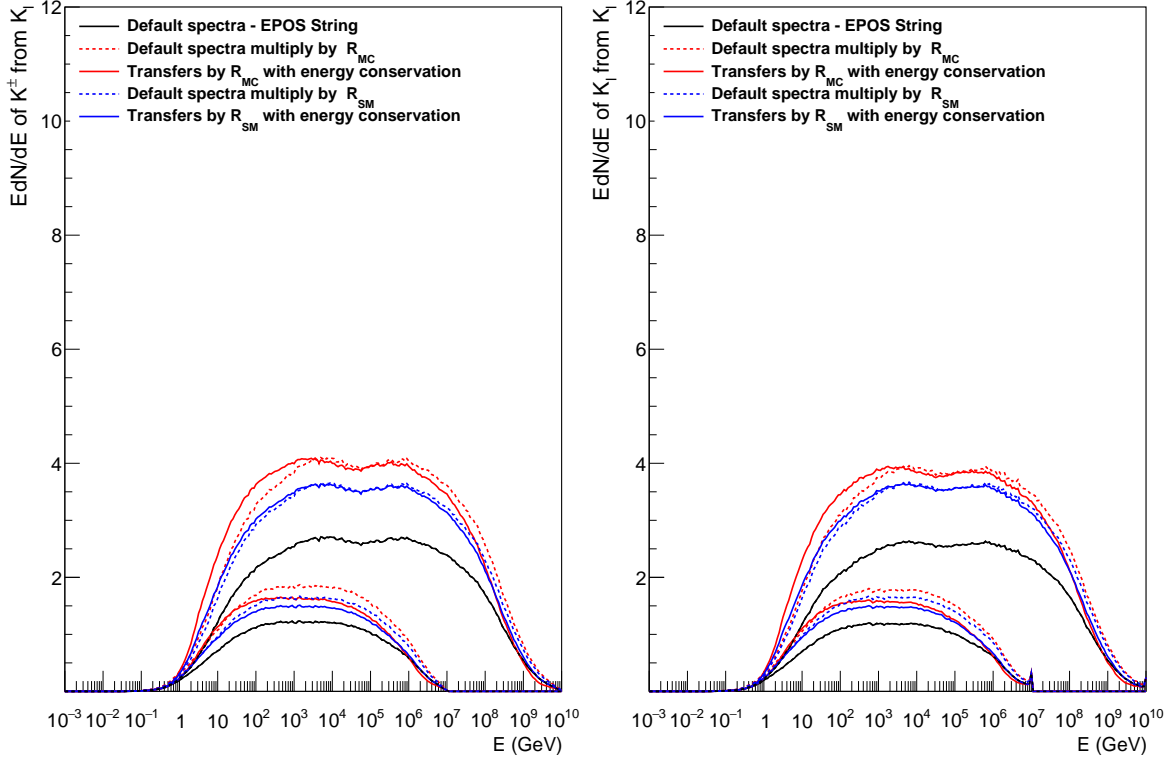


Figure 15: Spectrum of K^\pm (left) and K_l (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation

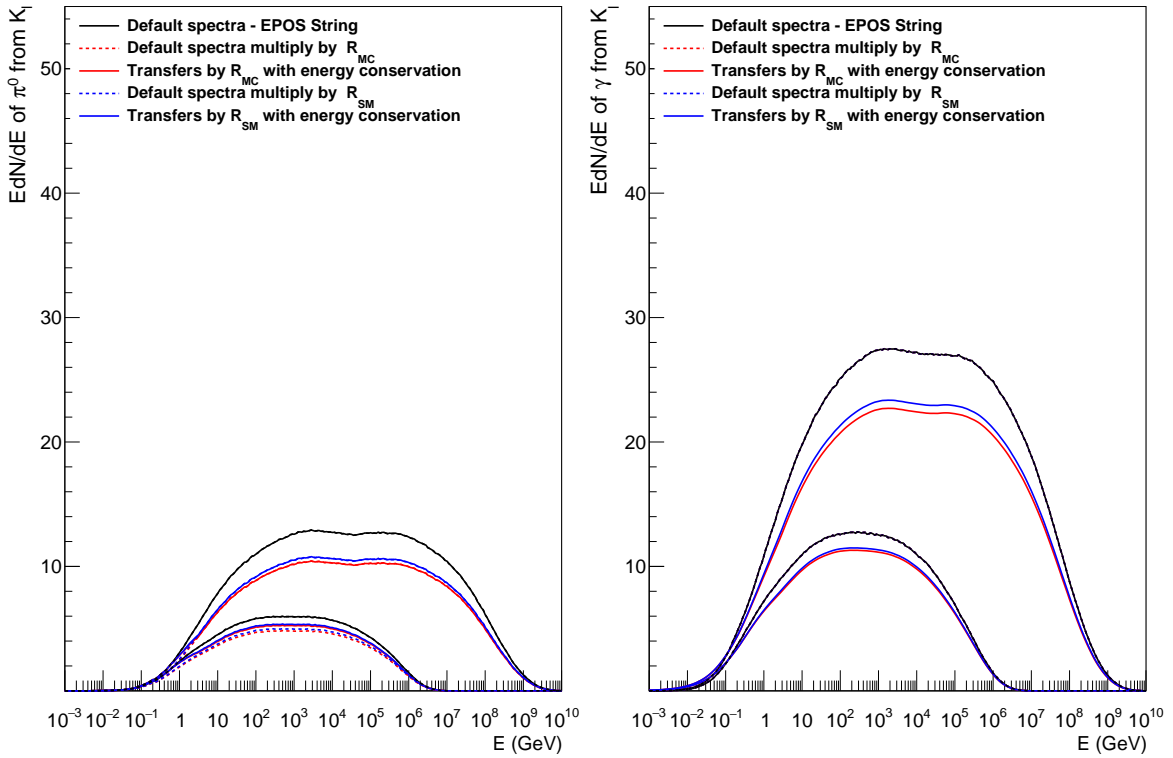


Figure 16: Spectrum of π^0 and gammas for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

EPOS - n+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

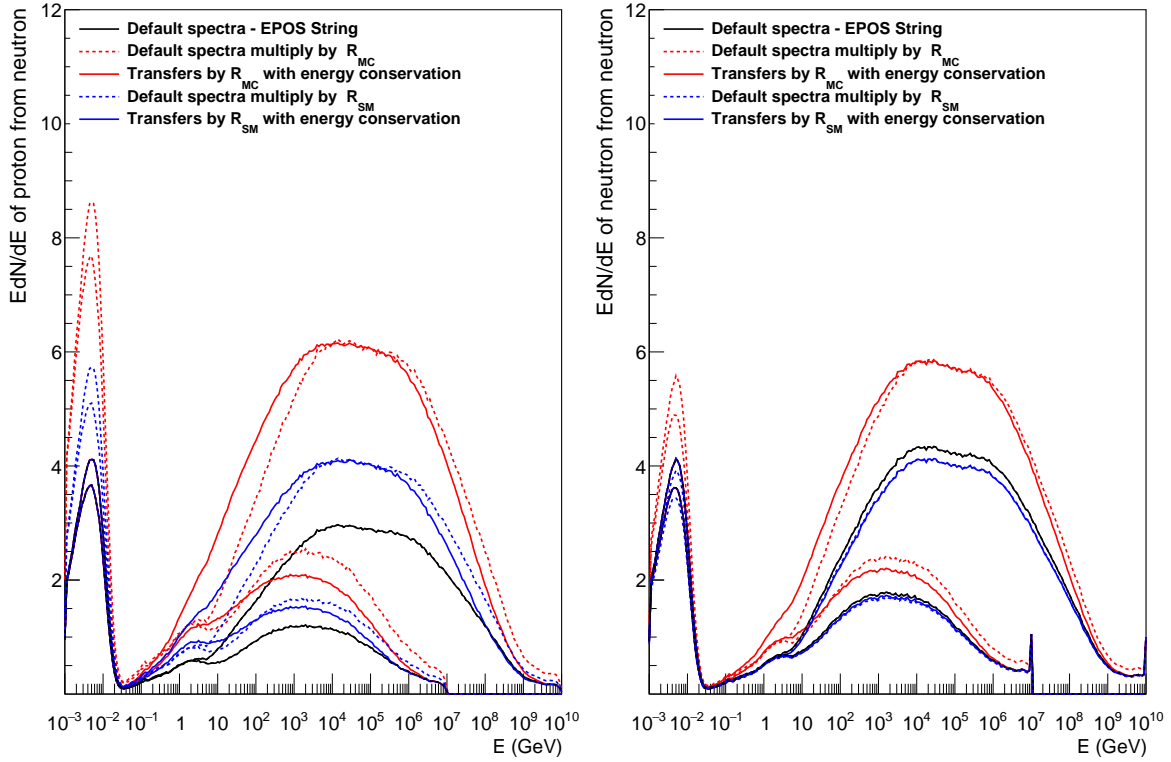


Figure 17: Spectrum of proton (left) and neutron (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation

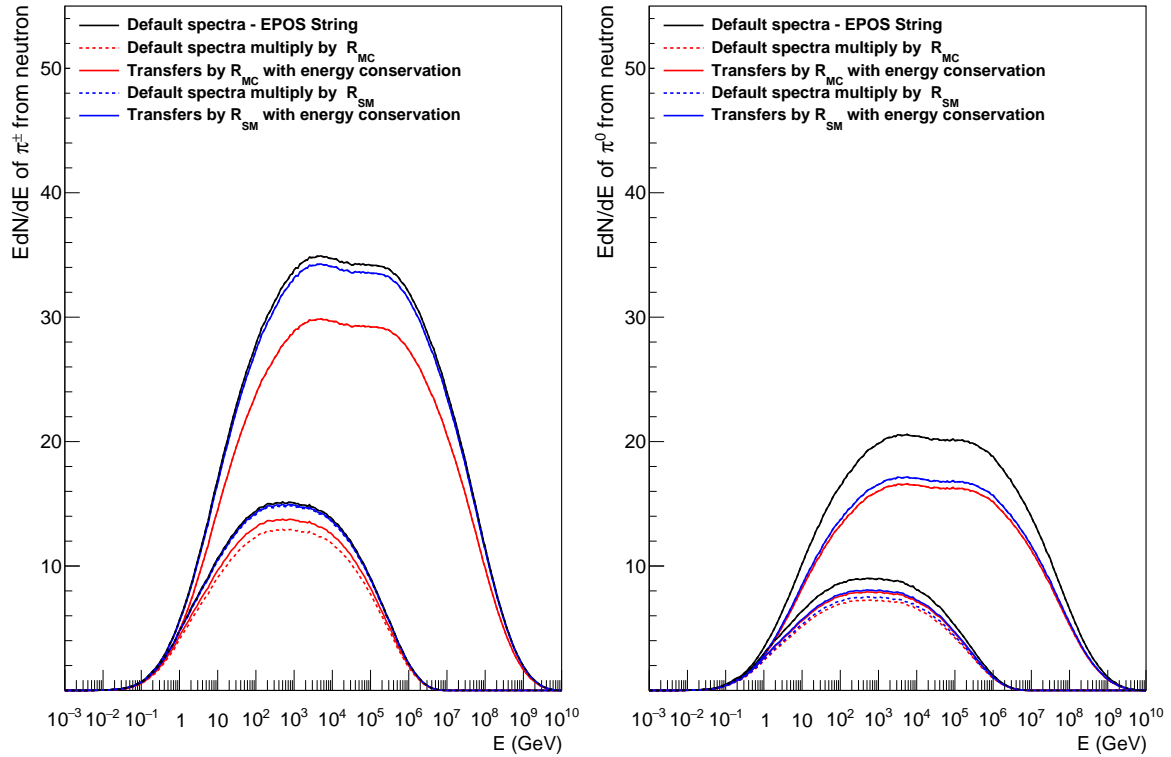


Figure 18: Spectrum of π^\pm (left) and π^0 (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

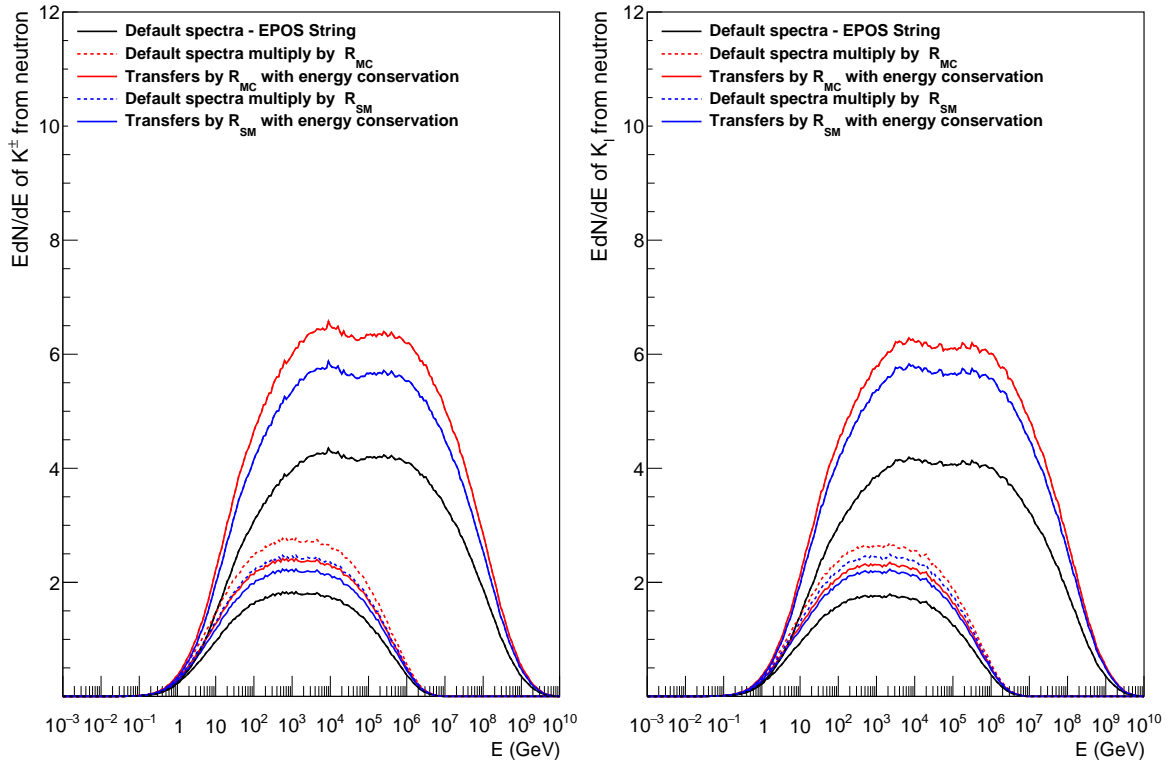


Figure 19: Spectrum of K^\pm (left) and K_l (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

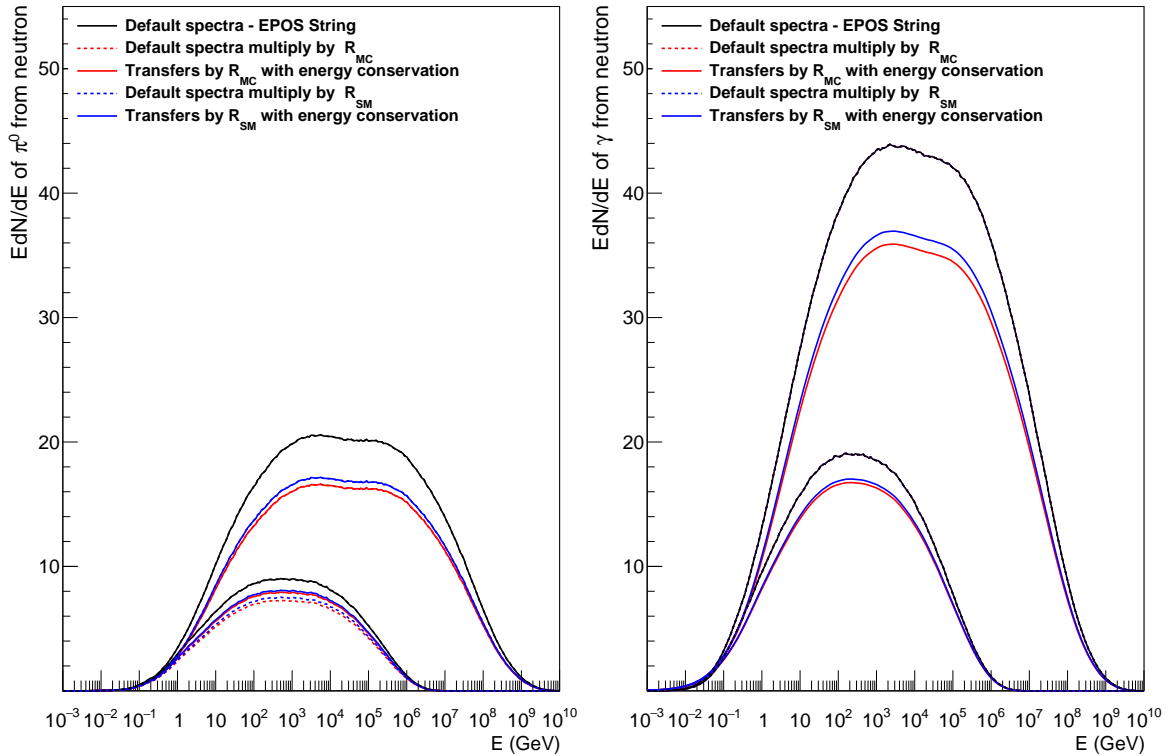


Figure 20: Spectrum of π^0 and gammas for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

QGSJETII - Proton+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

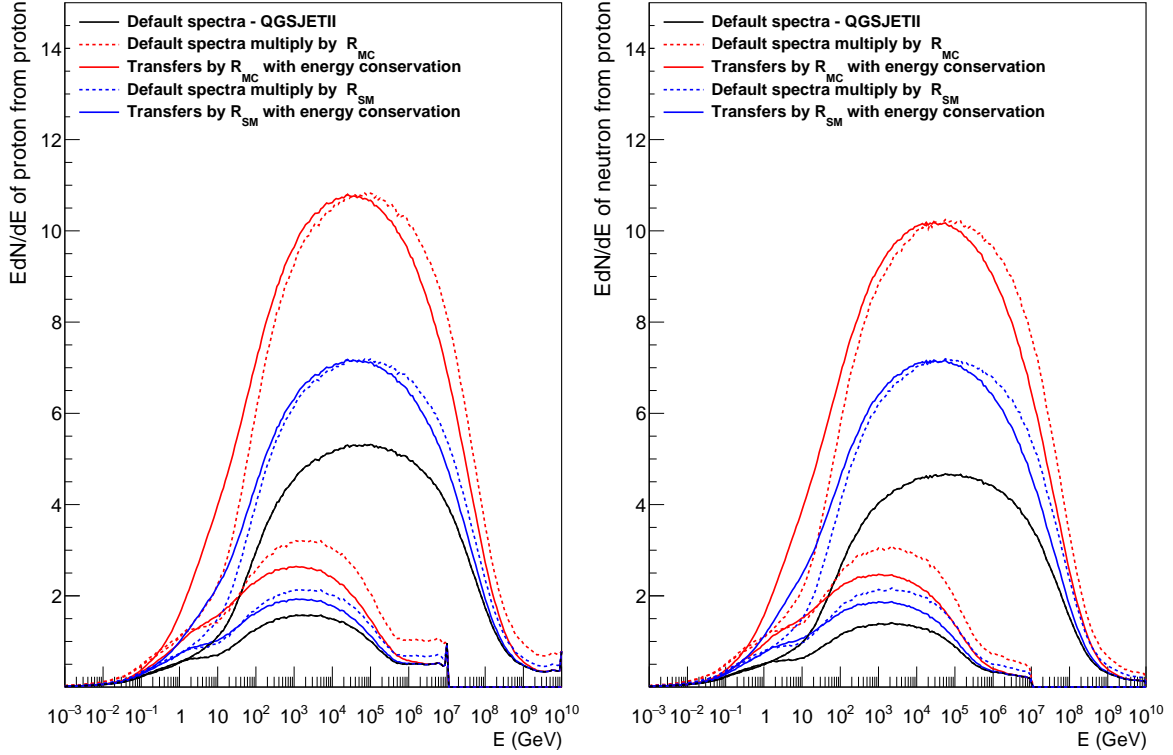


Figure 21: Spectrum of proton (left) and neutron (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation

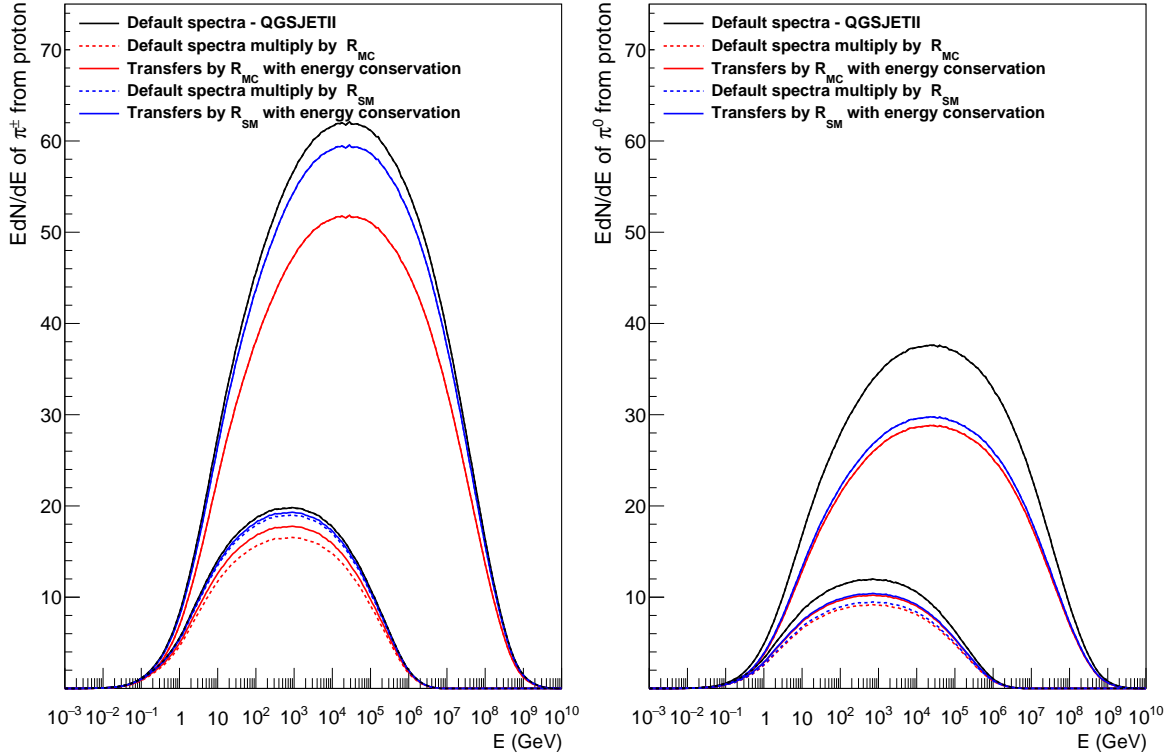


Figure 22: Spectrum of π^\pm (left) and π^0 (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

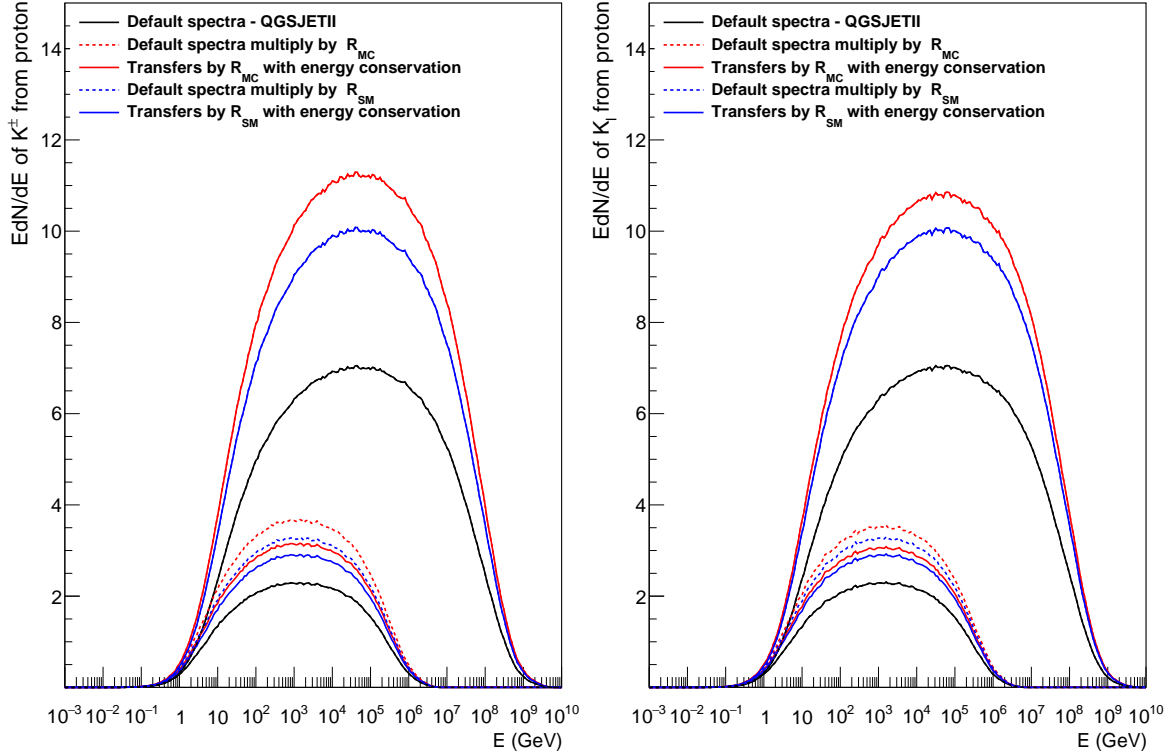


Figure 23: Spectrum of K^\pm (left) and K_l (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

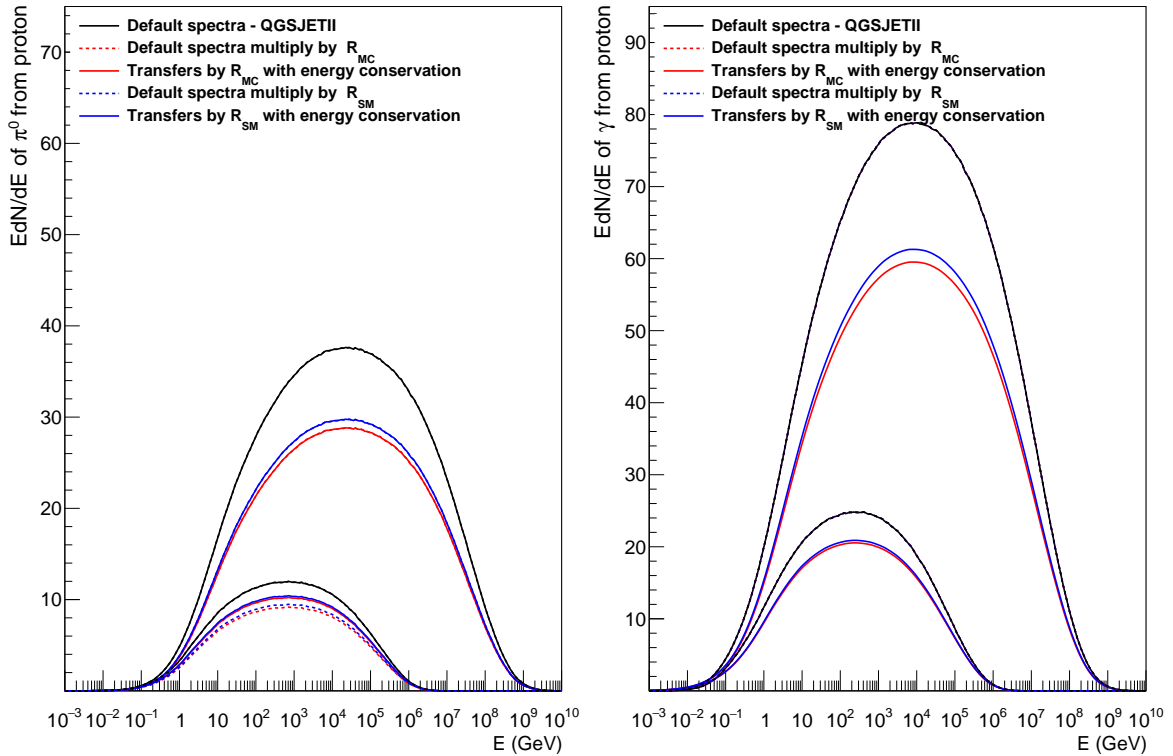


Figure 24: Spectrum of π^0 and gammas for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

QGSJETII - $\pi^\pm + \text{air}$ interaction

Protons, neutrons and kaons spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to pions. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.8E_0$, where E_0 is the pion energy in the interaction.

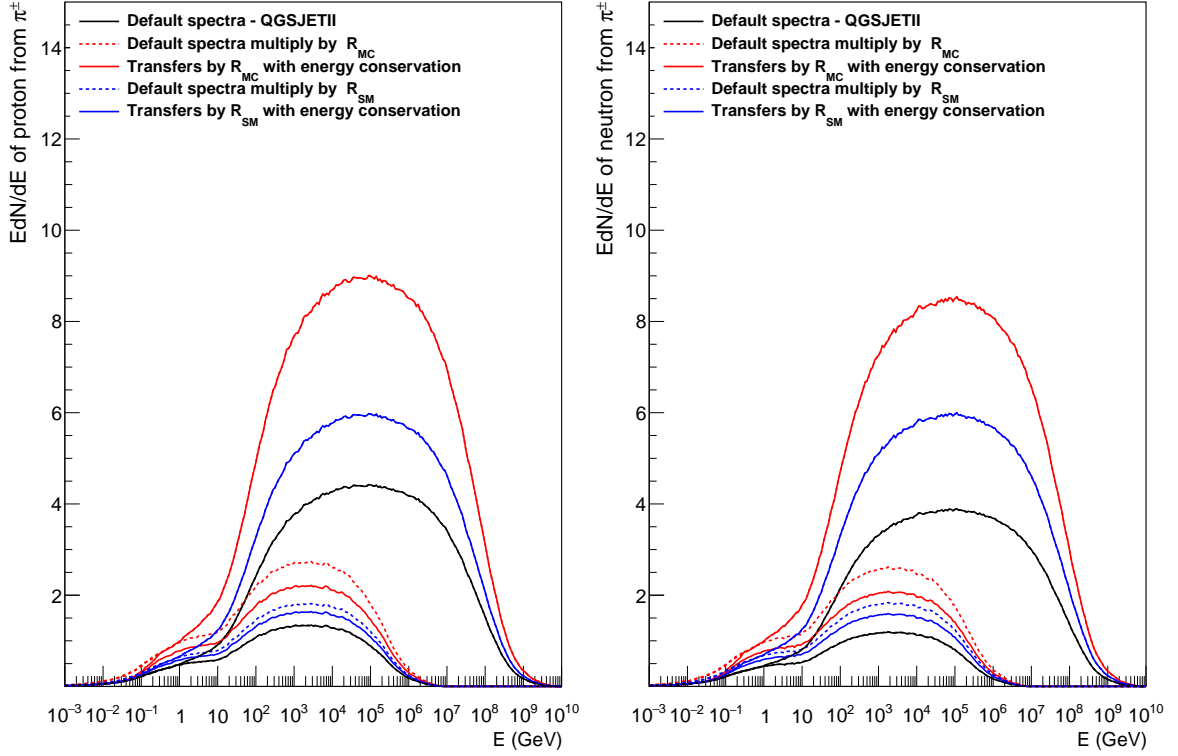


Figure 25: Spectrum of proton (left) and neutron (right) for $\pi^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

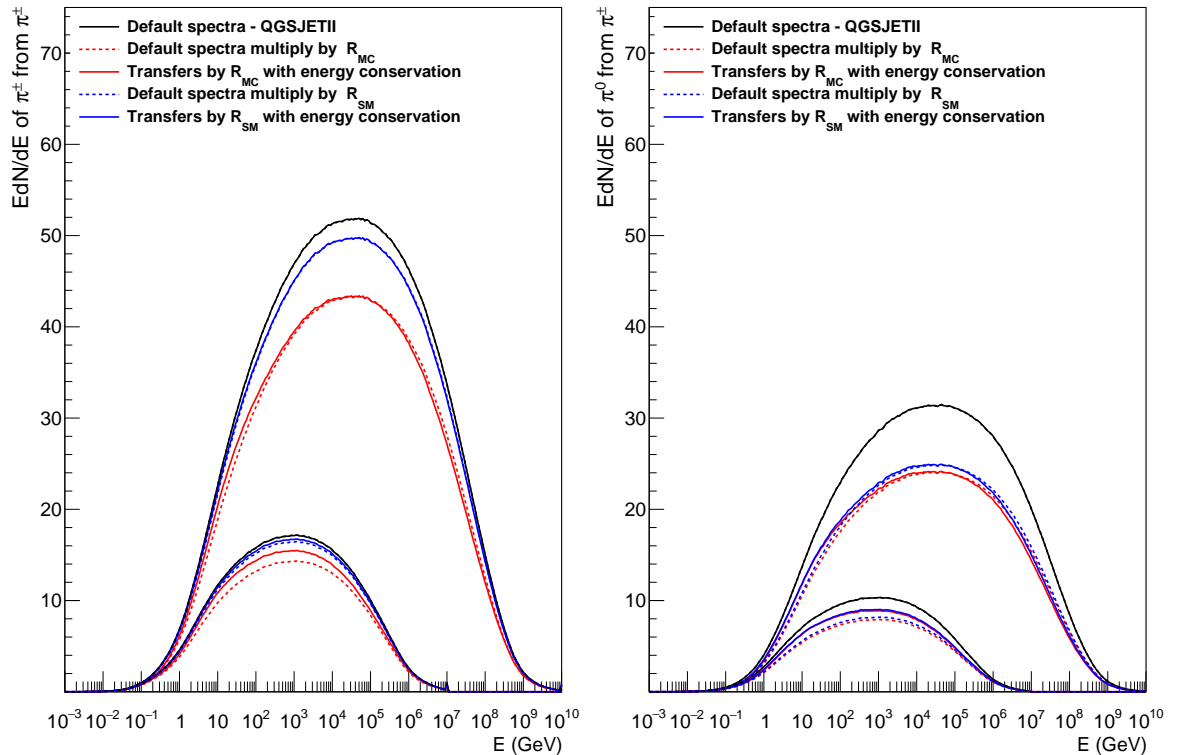


Figure 26: Spectrum of π^\pm (left) and π^0 (right) for $\pi^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation

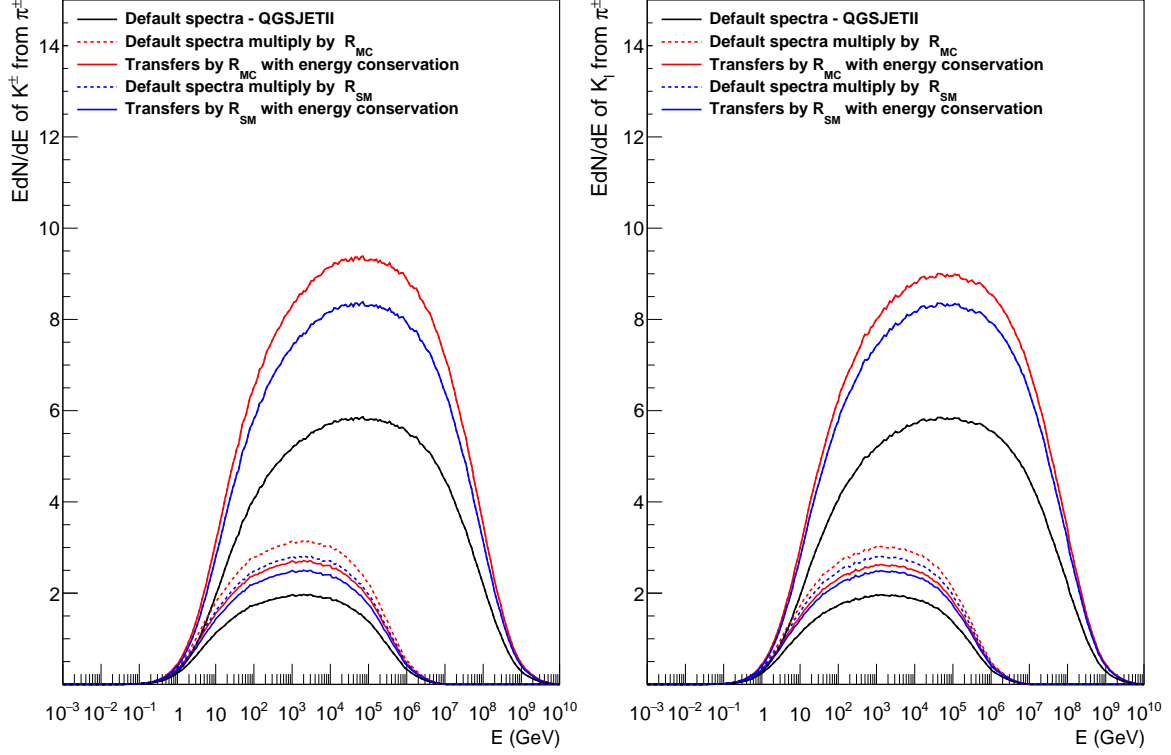


Figure 27: Spectrum of K^\pm (left) and K_l (right) for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

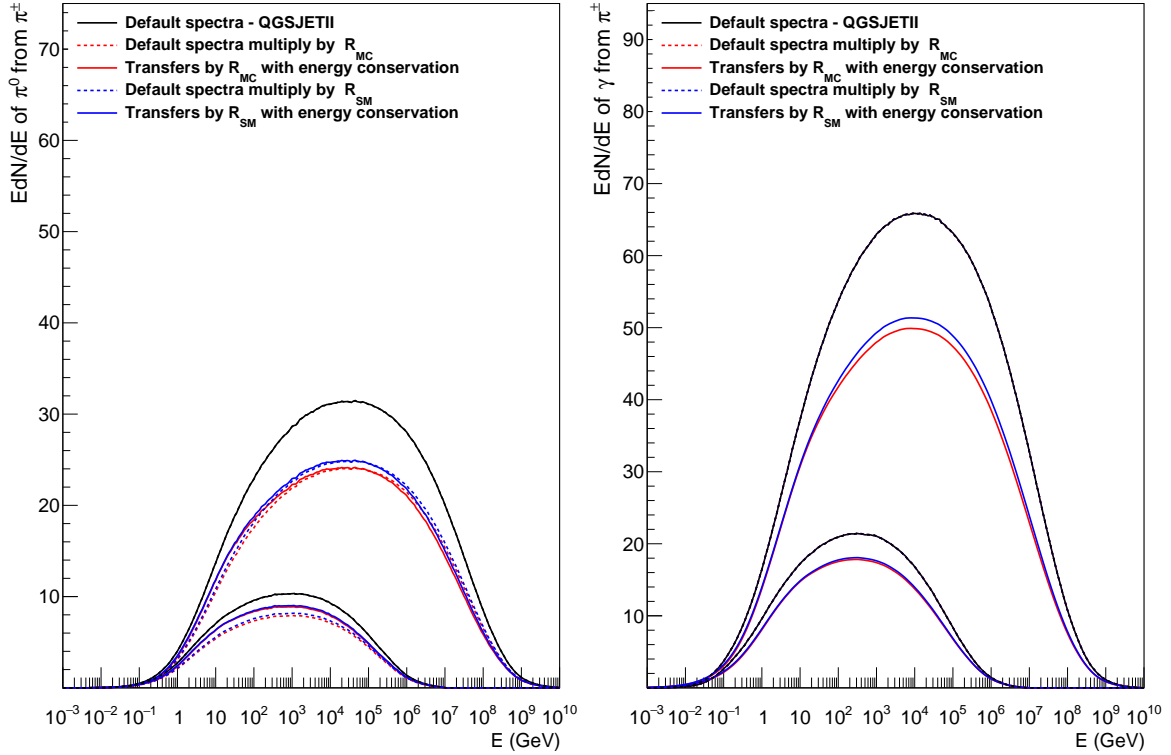


Figure 28: Spectrum of π^0 and gammas for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

QGSJETII - $K^\pm + \text{air}$ interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

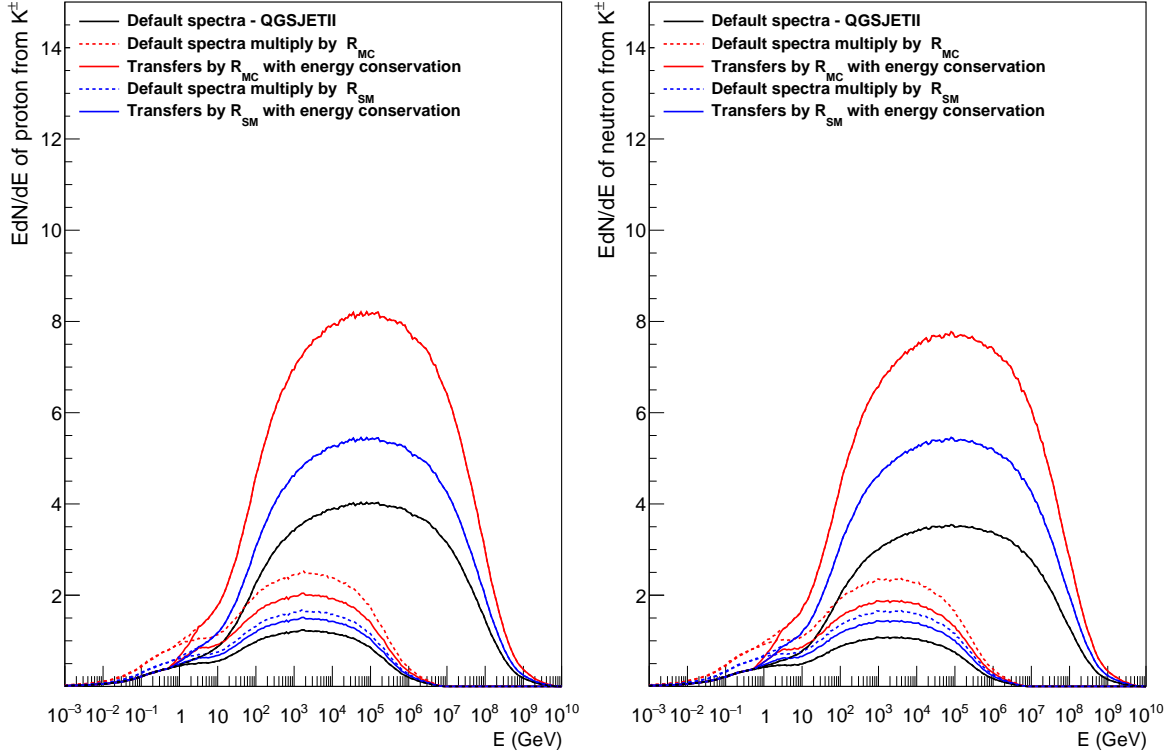


Figure 29: Spectrum of proton (left) and neutron (right) for $K^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

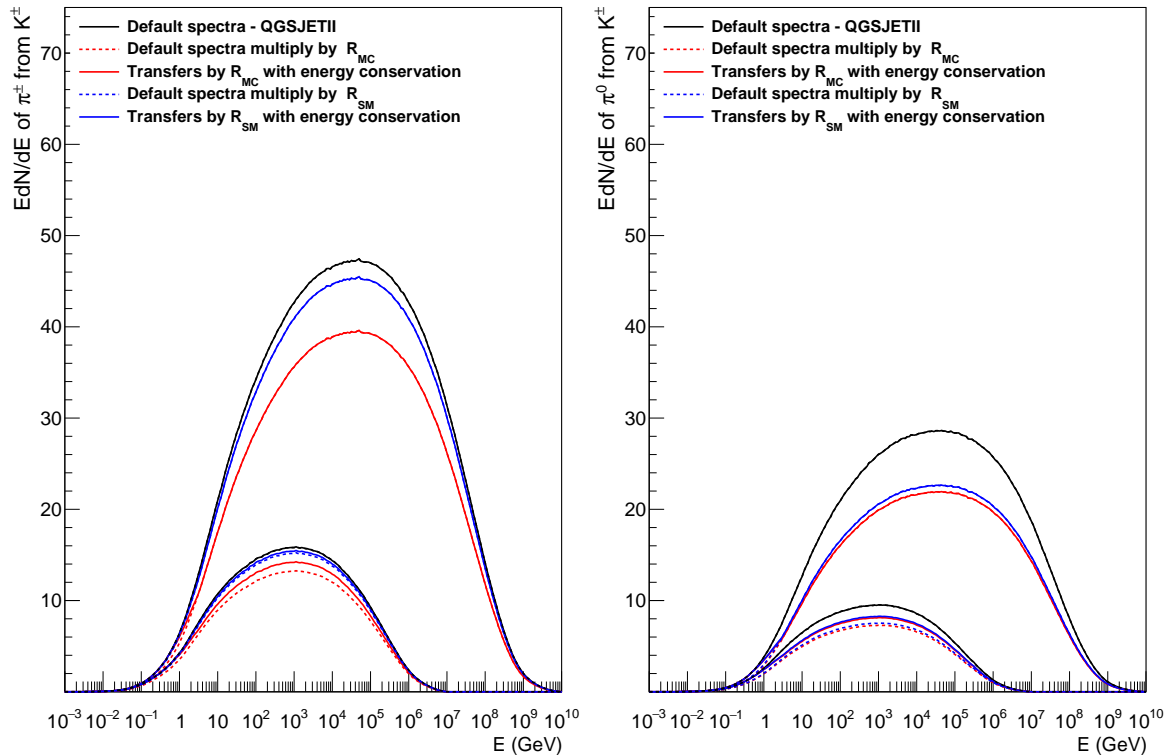


Figure 30: Spectrum of π^\pm (left) and π^0 (right) for $K^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

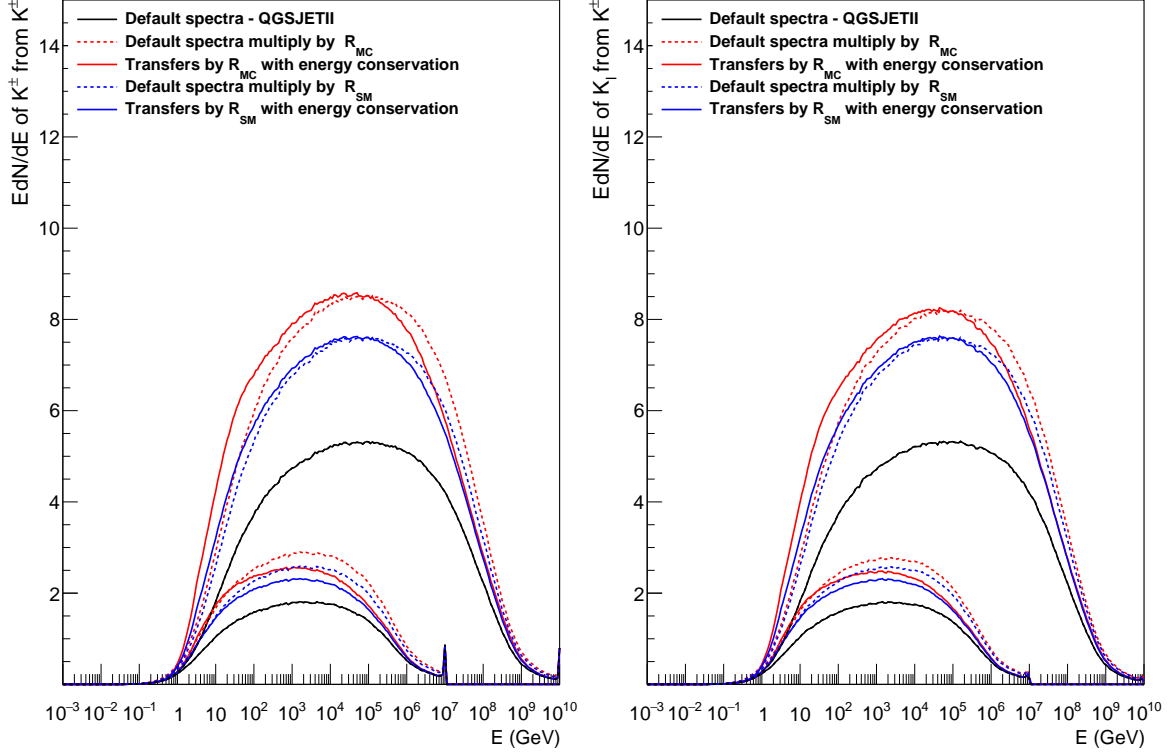


Figure 31: Spectrum of K^\pm (left) and K_l (right) for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation

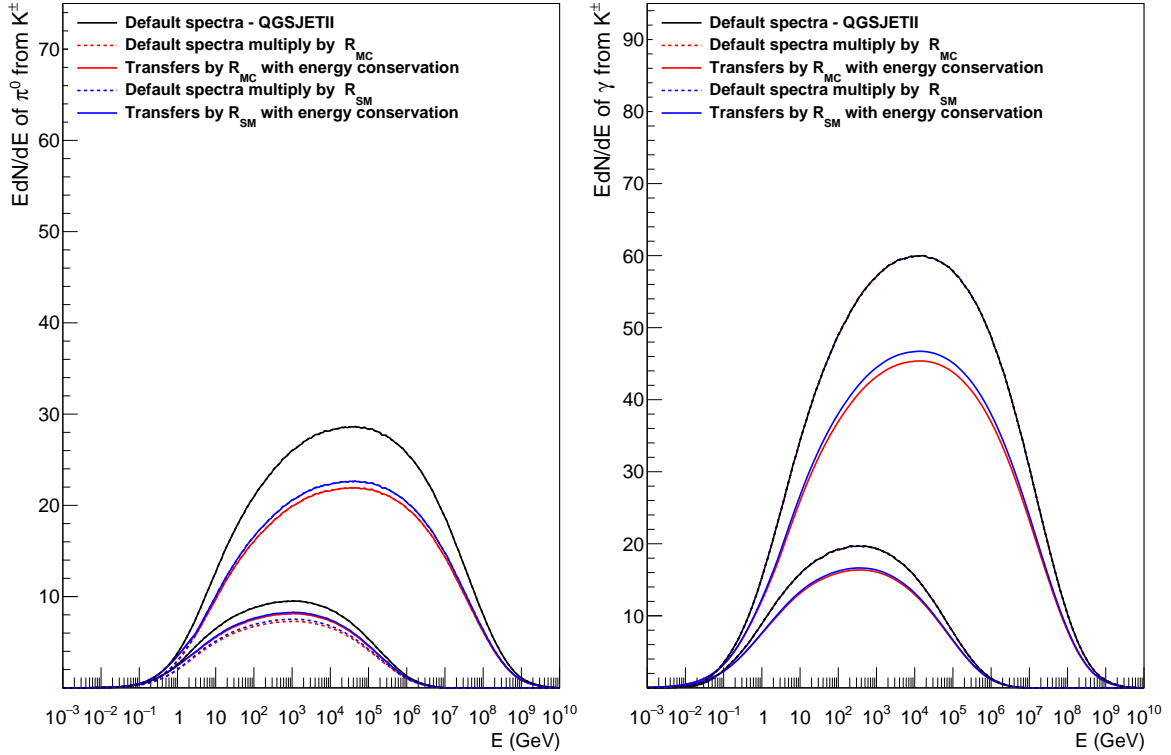


Figure 32: Spectrum of π^0 and gammas for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

QGSJETII - K_l +air interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

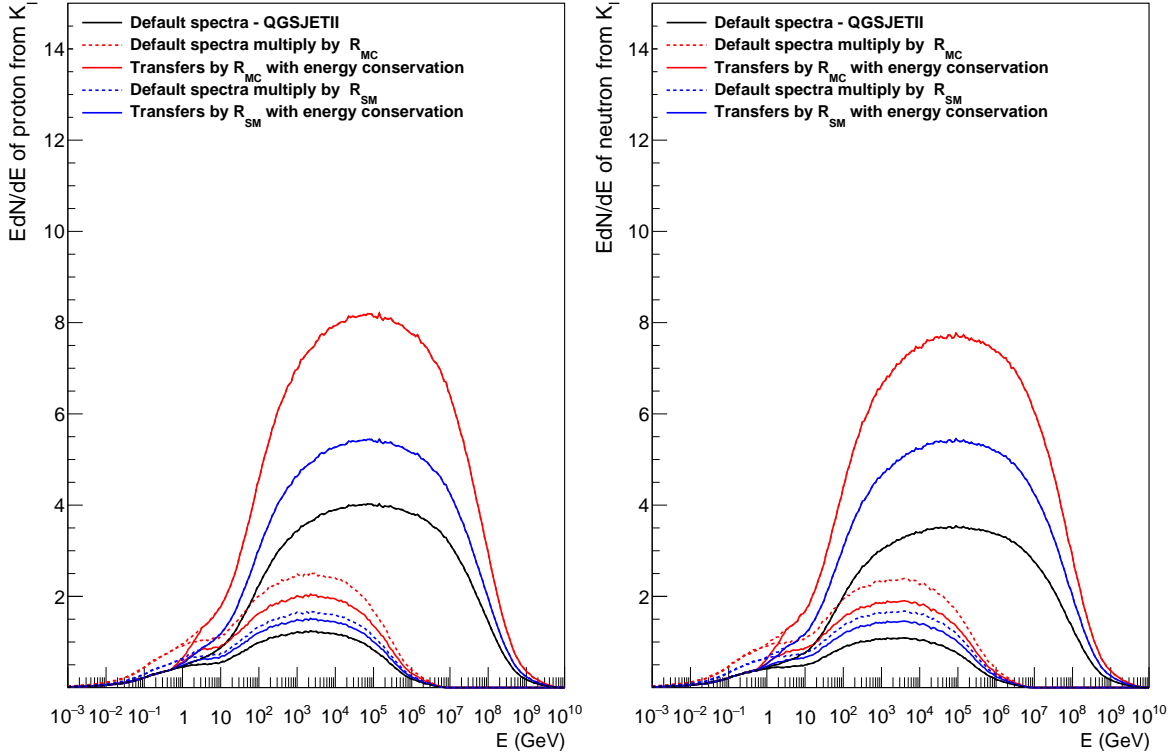


Figure 33: Spectrum of proton (left) and neutron (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

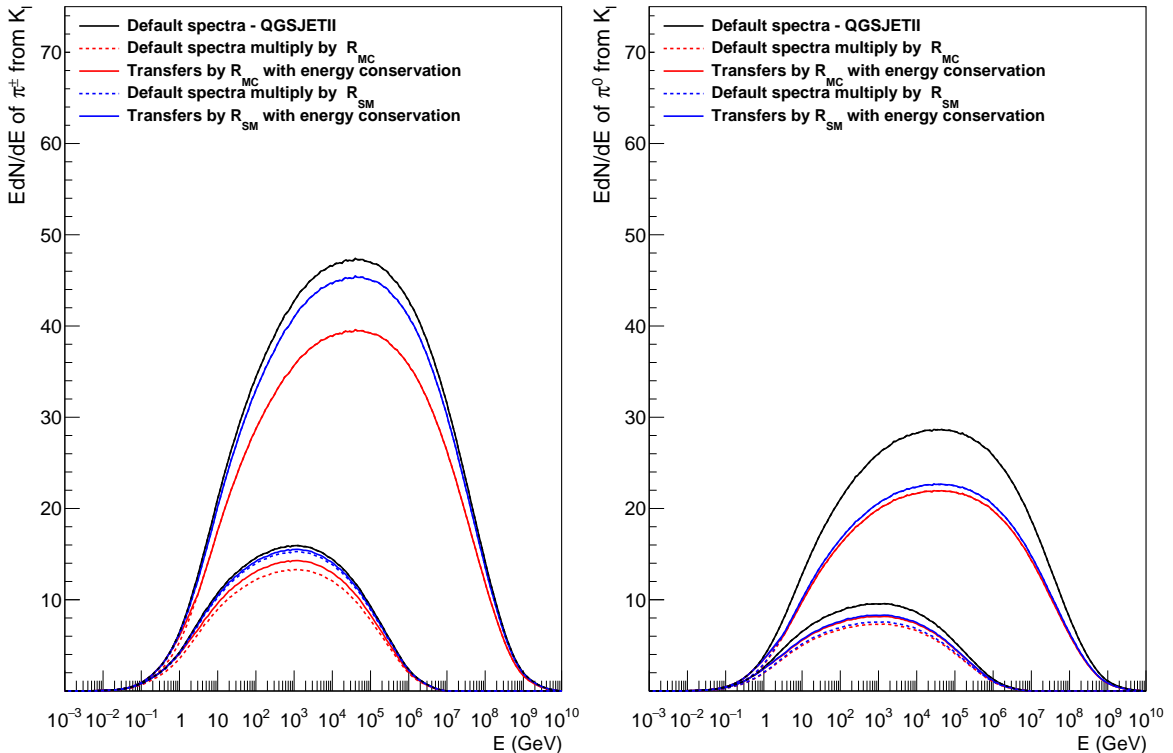


Figure 34: Spectrum of π^\pm (left) and π^0 (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

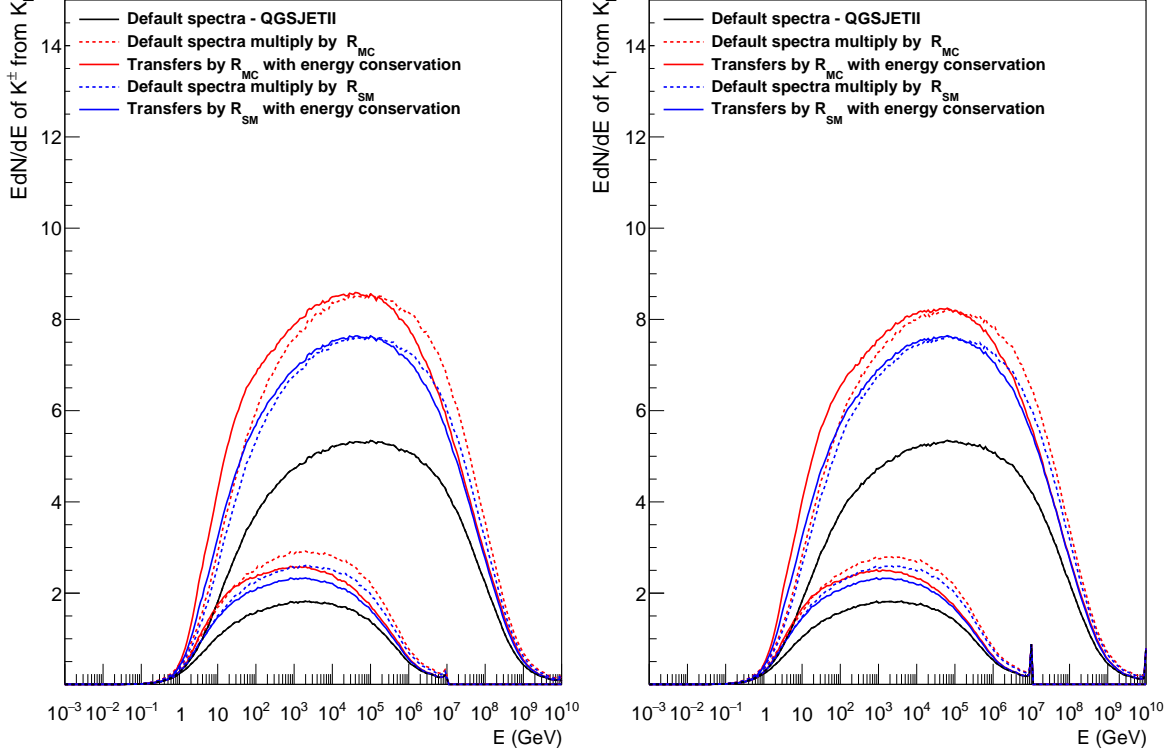


Figure 35: Spectrum of K^\pm (left) and K_l (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation

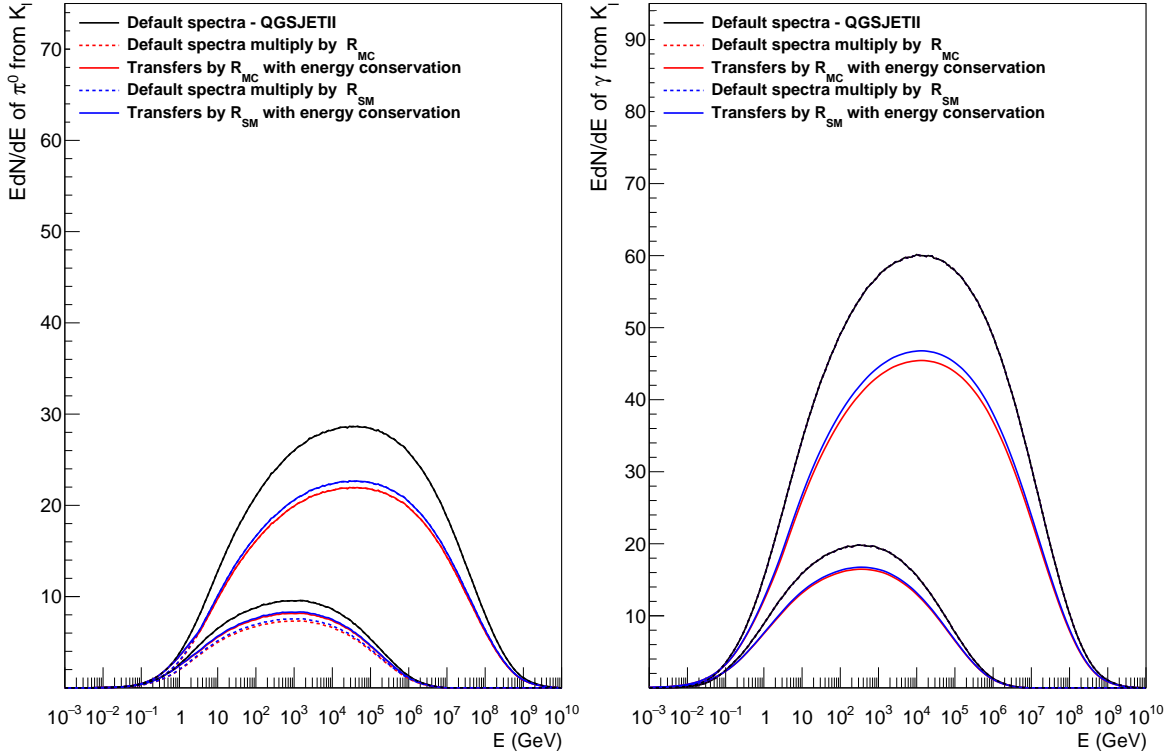


Figure 36: Spectrum of π^0 and gammas for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

QGSJETII - n+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

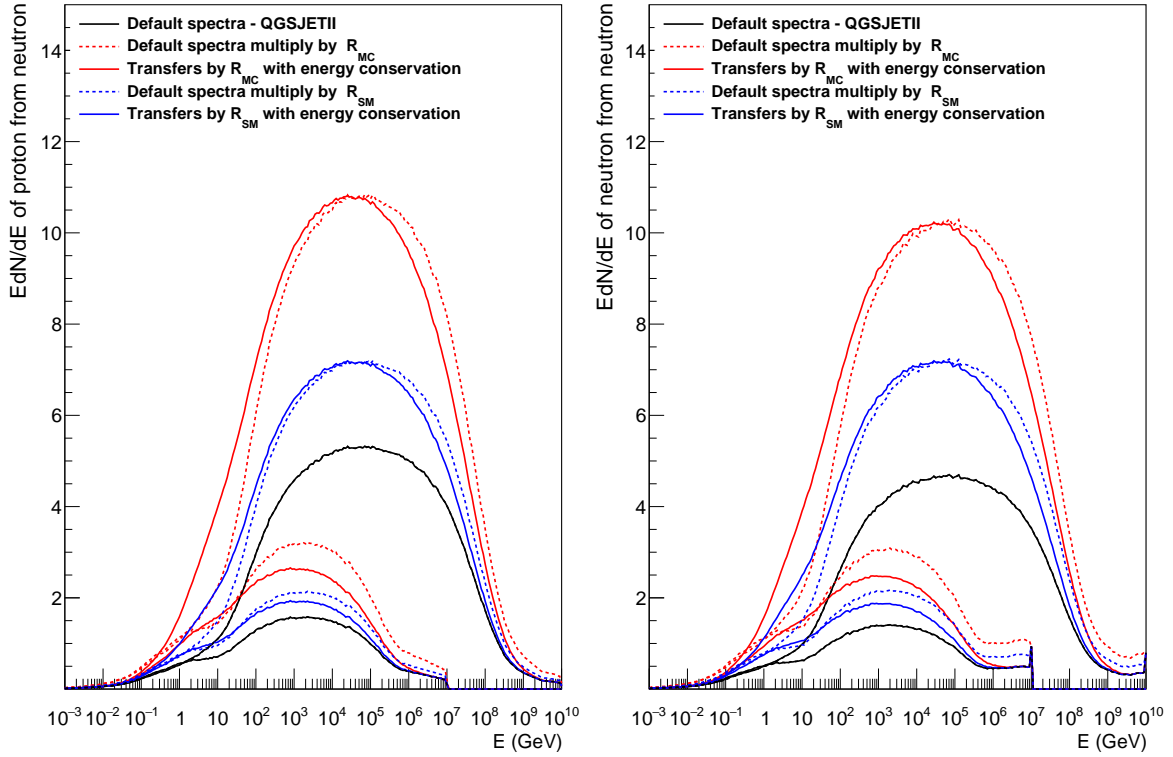


Figure 37: Spectrum of proton (left) and neutron (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation

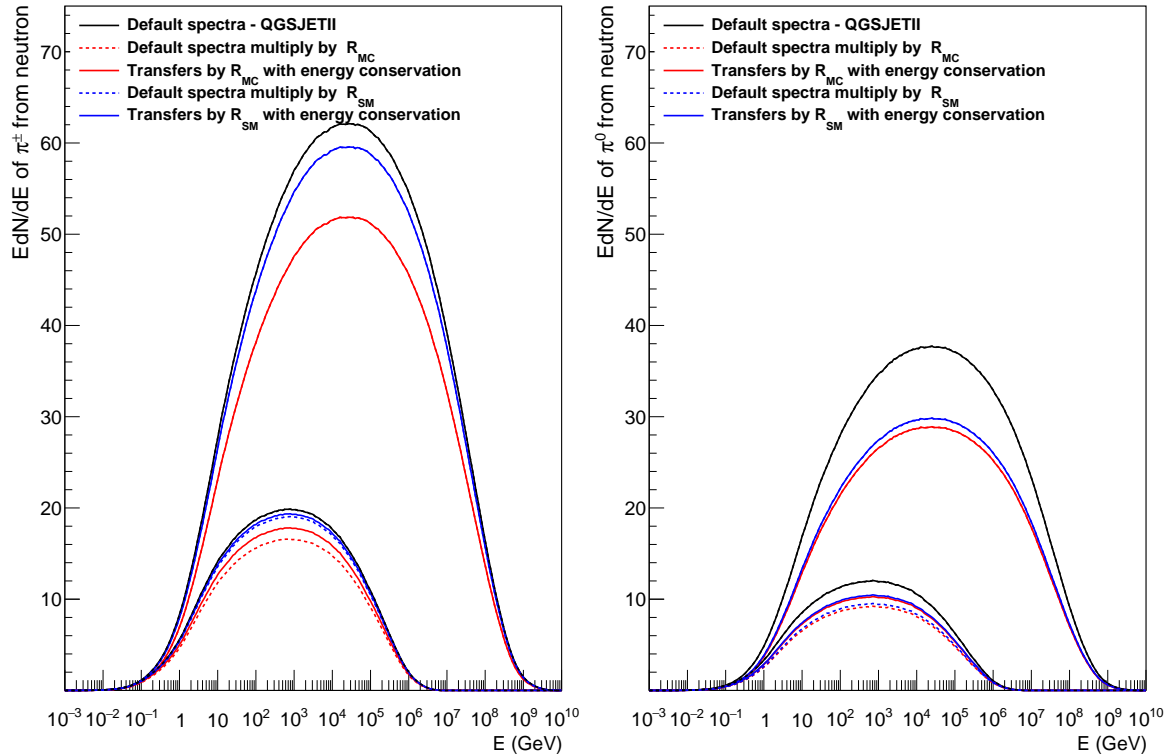


Figure 38: Spectrum of π^\pm (left) and π^0 (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

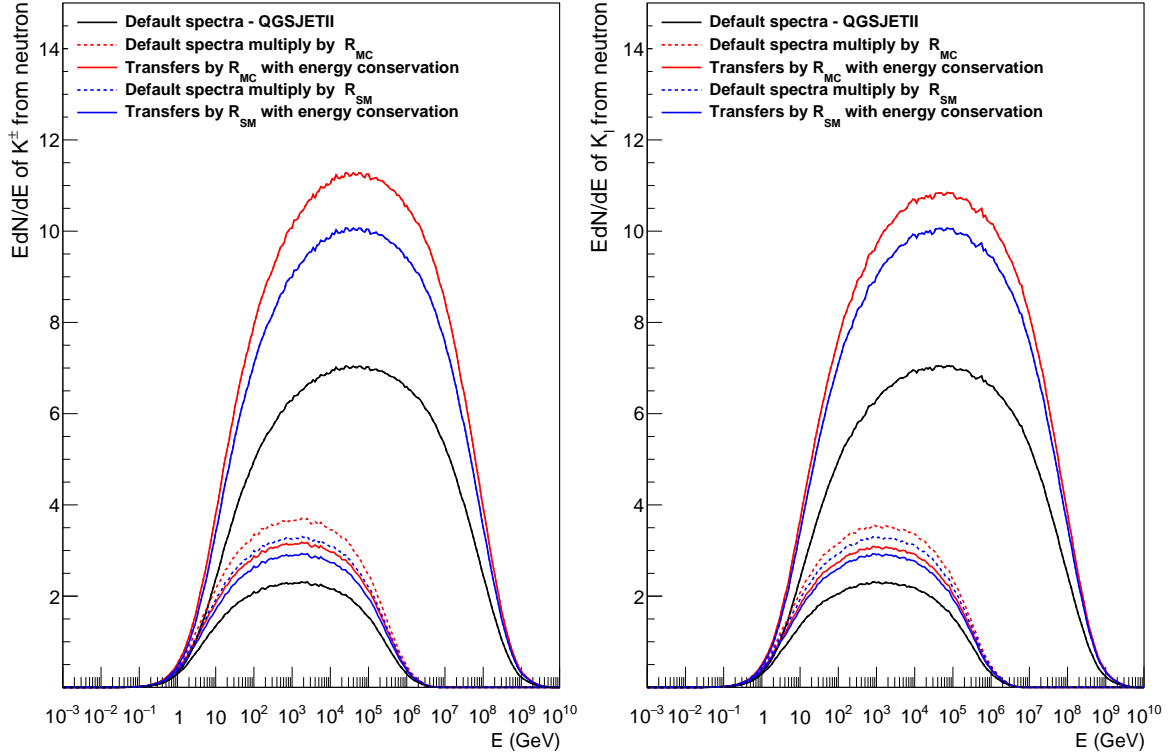


Figure 39: Spectrum of K^\pm (left) and K_l (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

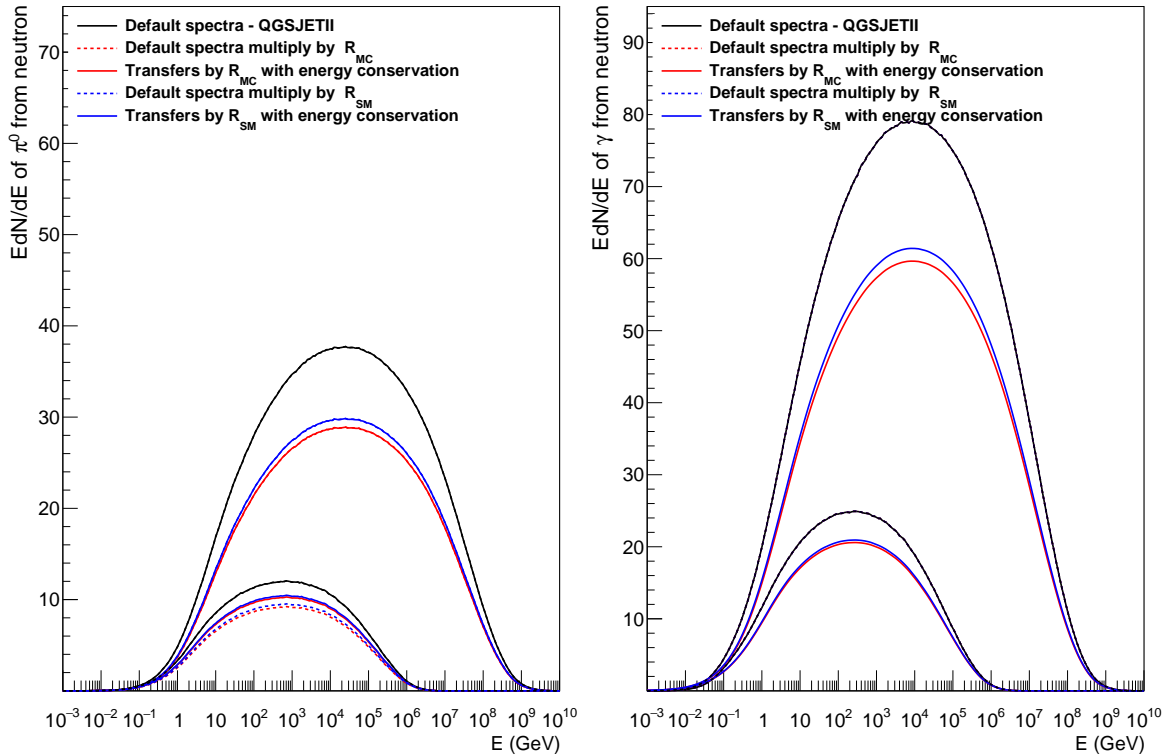


Figure 40: Spectrum of π^0 and gammas for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

SIBYLL - Proton+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

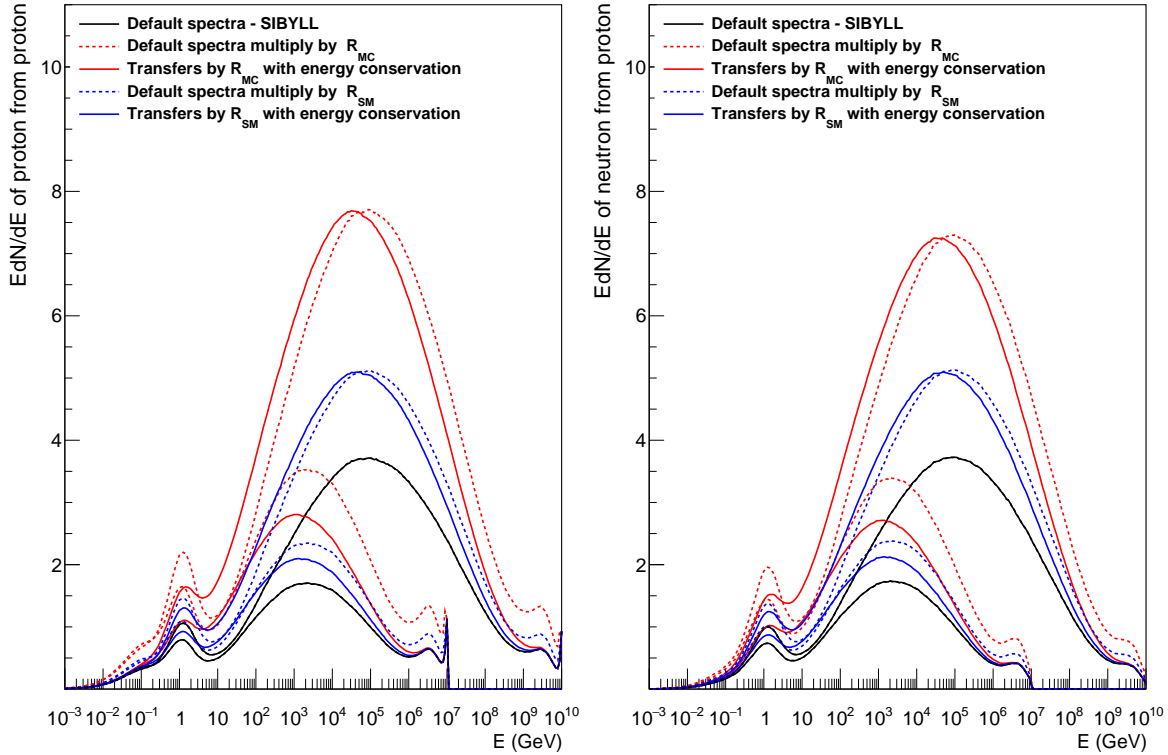


Figure 41: Spectrum of proton (left) and neutron (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation

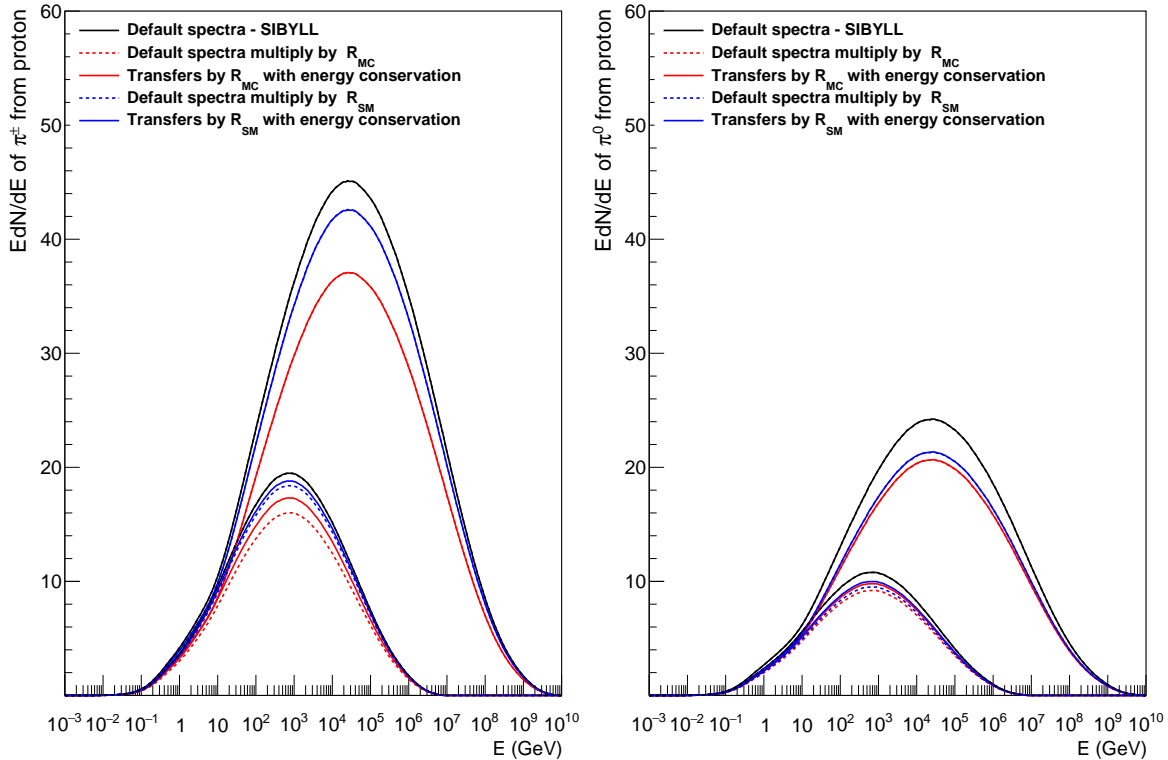


Figure 42: Spectrum of π^\pm (left) and π^0 (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

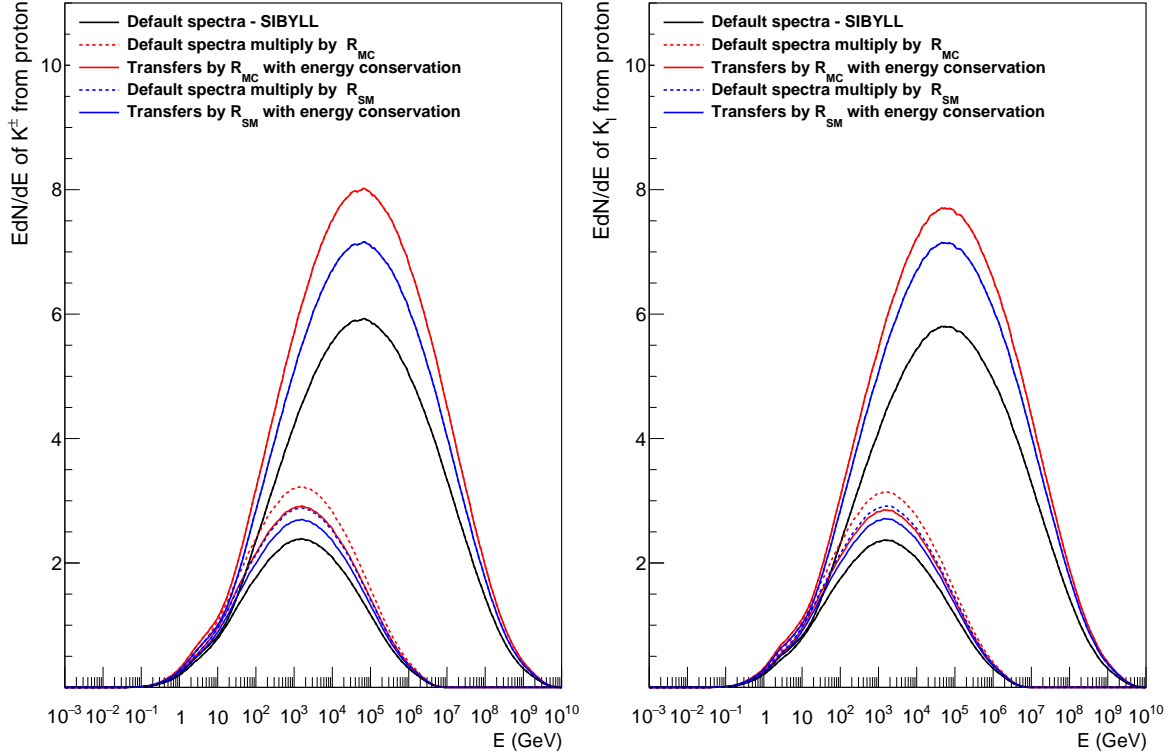


Figure 43: Spectrum of K^\pm (left) and K_l (right) for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

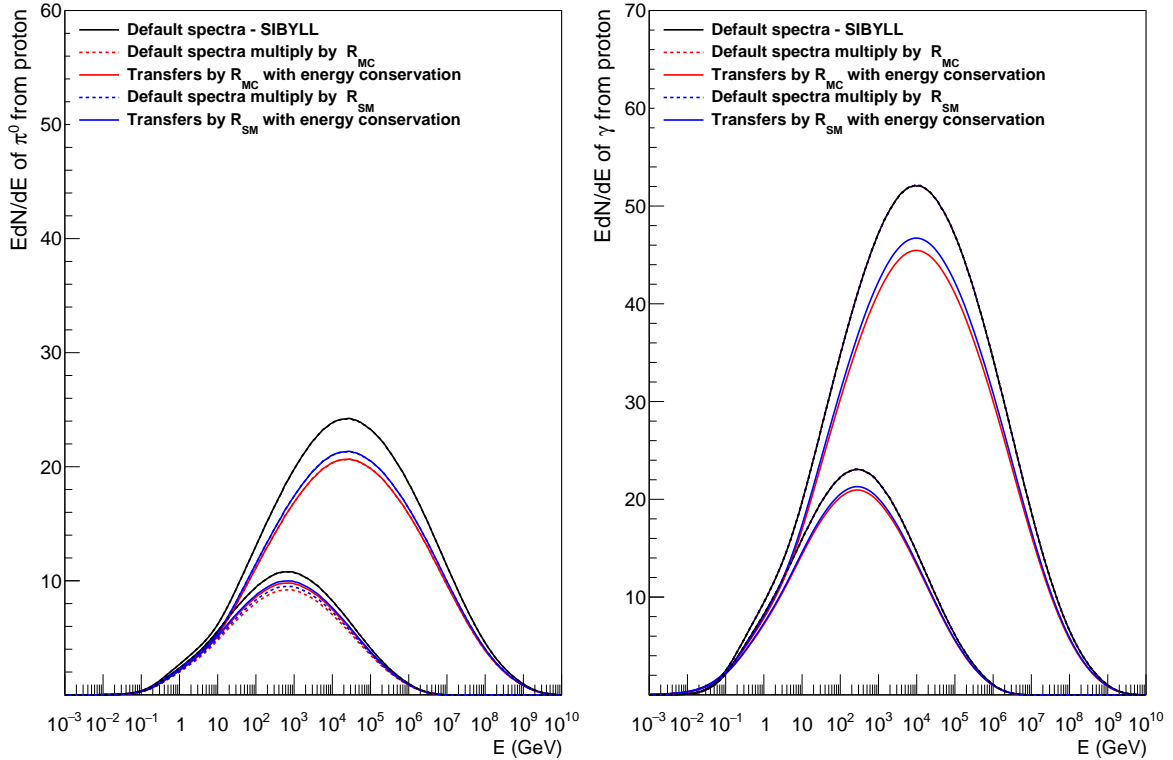


Figure 44: Spectrum of π^0 and gammas for p+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

SIBYLL - $\pi^\pm + \text{air}$ interaction

Protons, neutrons and kaons spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to pions. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.8E_0$, where E_0 is the pion energy in the interaction.

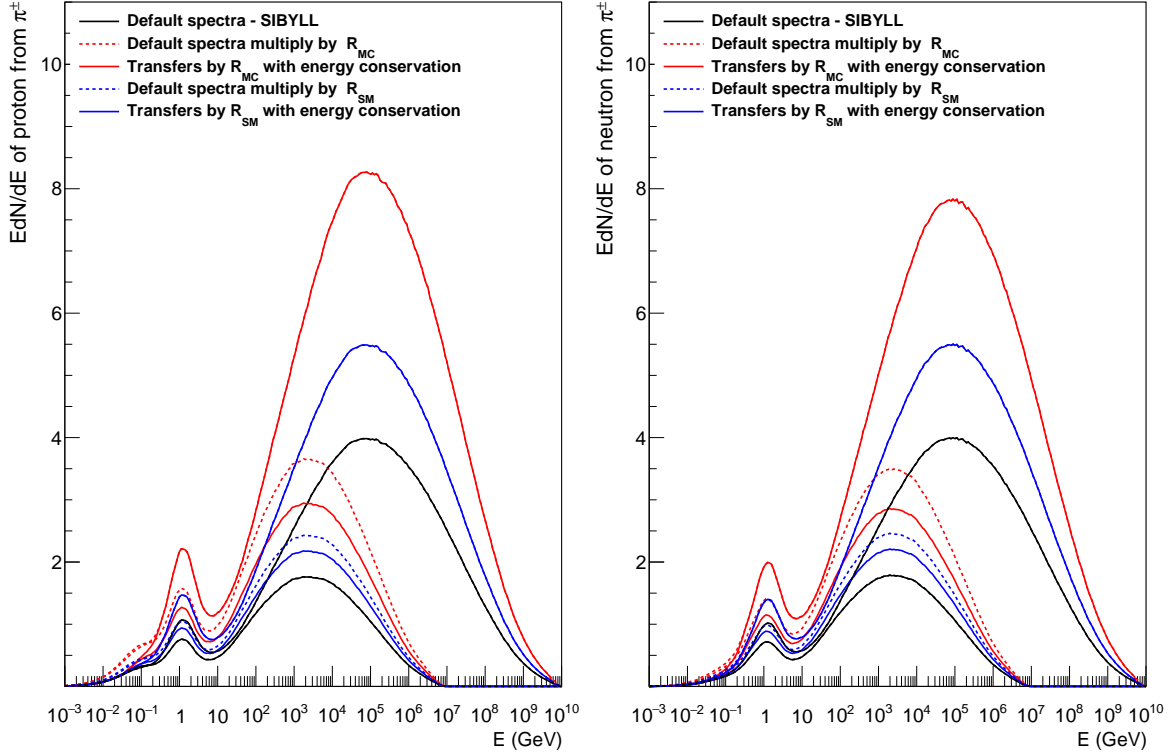


Figure 45: Spectrum of proton (left) and neutron (right) for $\pi^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

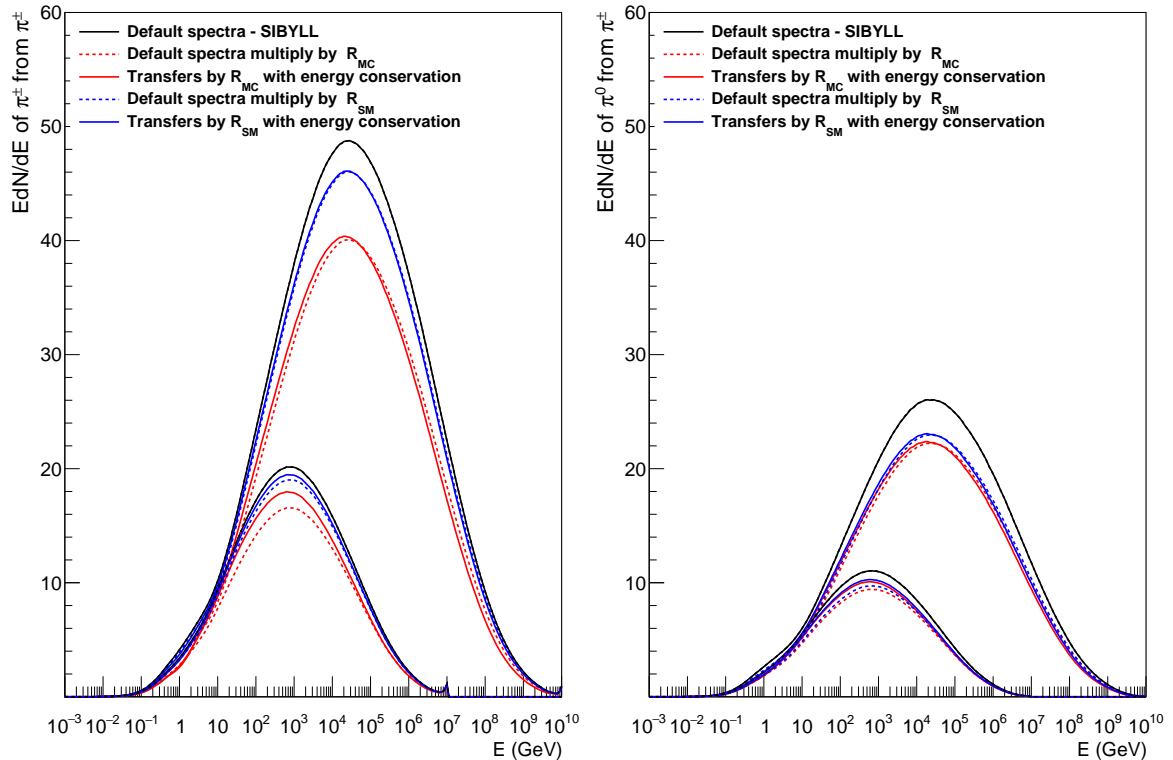


Figure 46: Spectrum of π^\pm (left) and π^0 (right) for $\pi^\pm + \text{air}$ interaction applying R_{MC} and R_{SM} and energy conservation

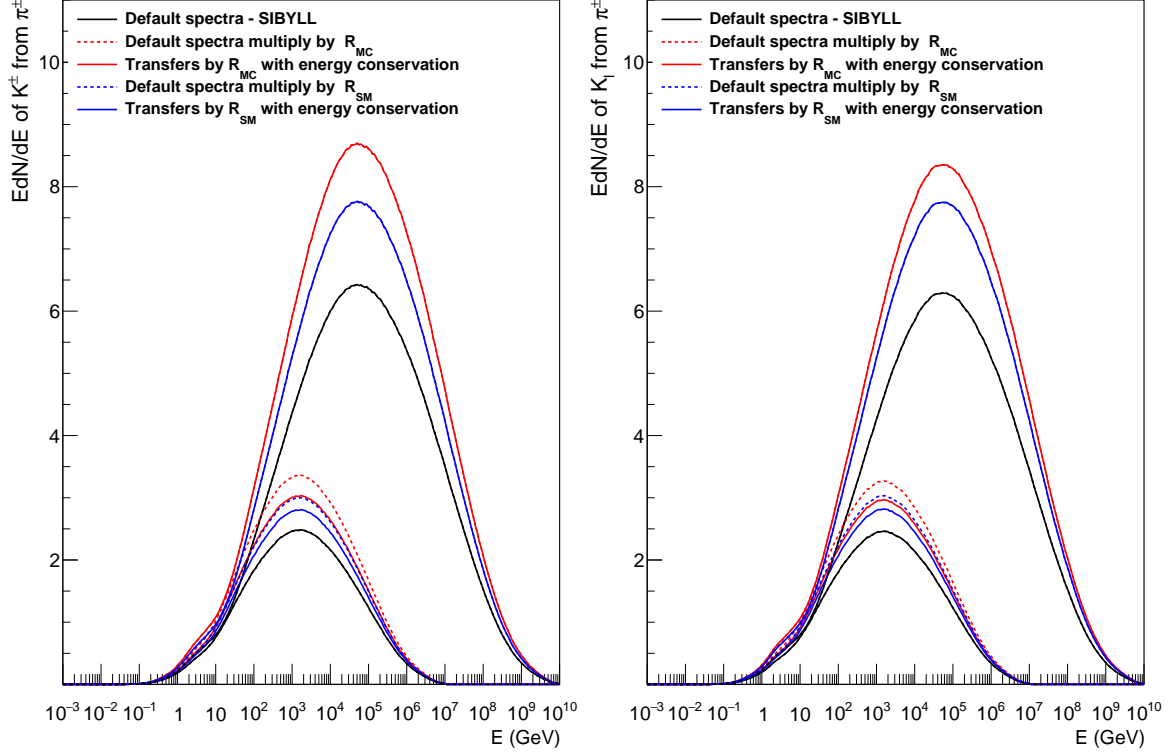


Figure 47: Spectrum of K^\pm (left) and K_l (right) for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

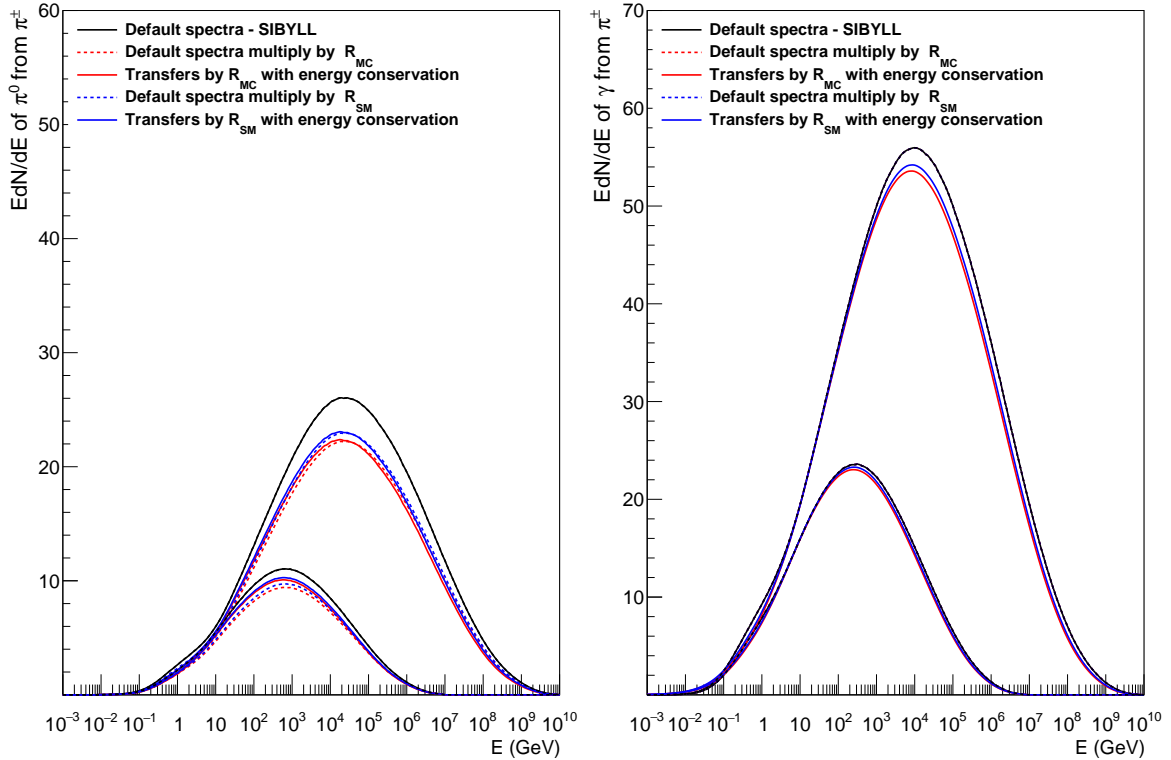


Figure 48: Spectrum of π^0 and gammas for π^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

SIBYLL - K^\pm + air interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

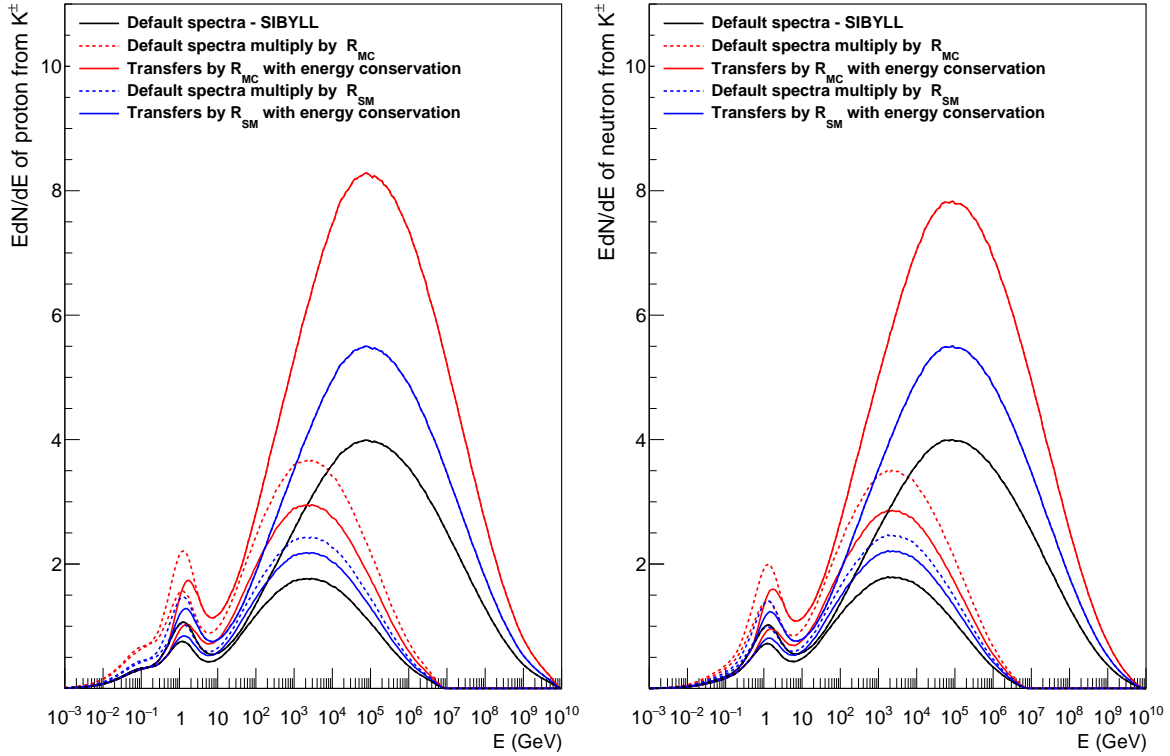


Figure 49: Spectrum of proton (left) and neutron (right) for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

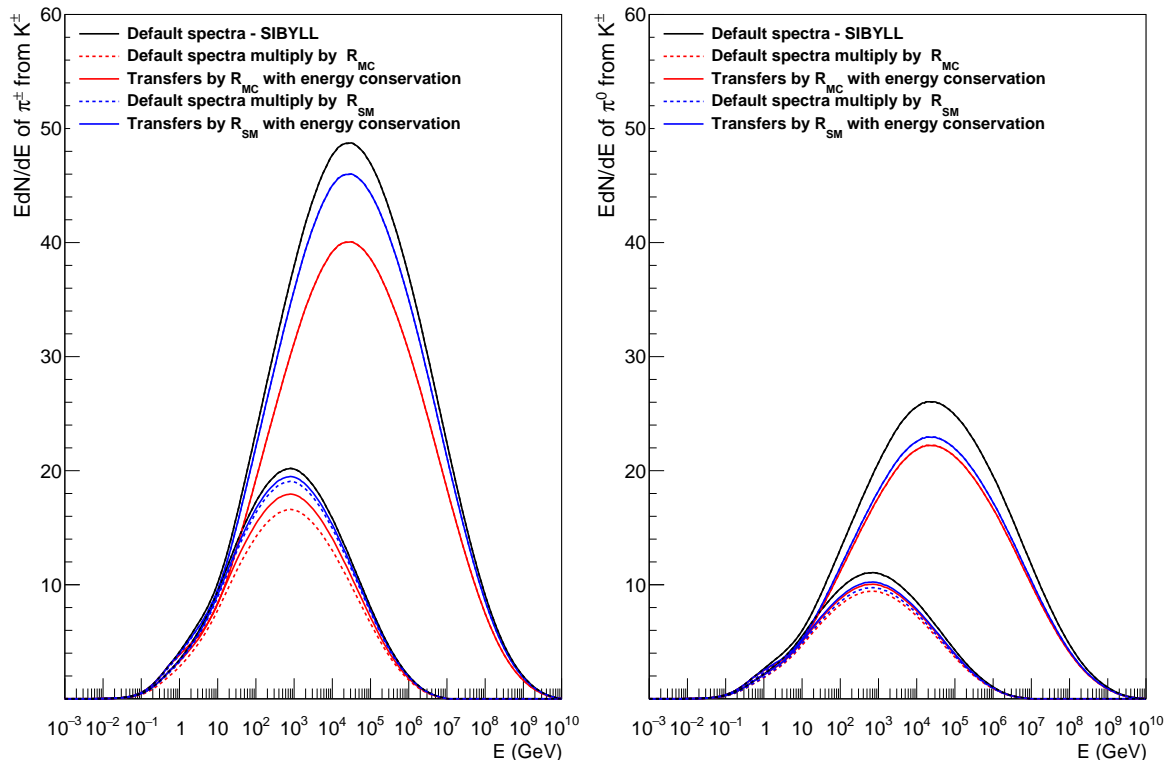


Figure 50: Spectrum of π^\pm (left) and π^0 (right) for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

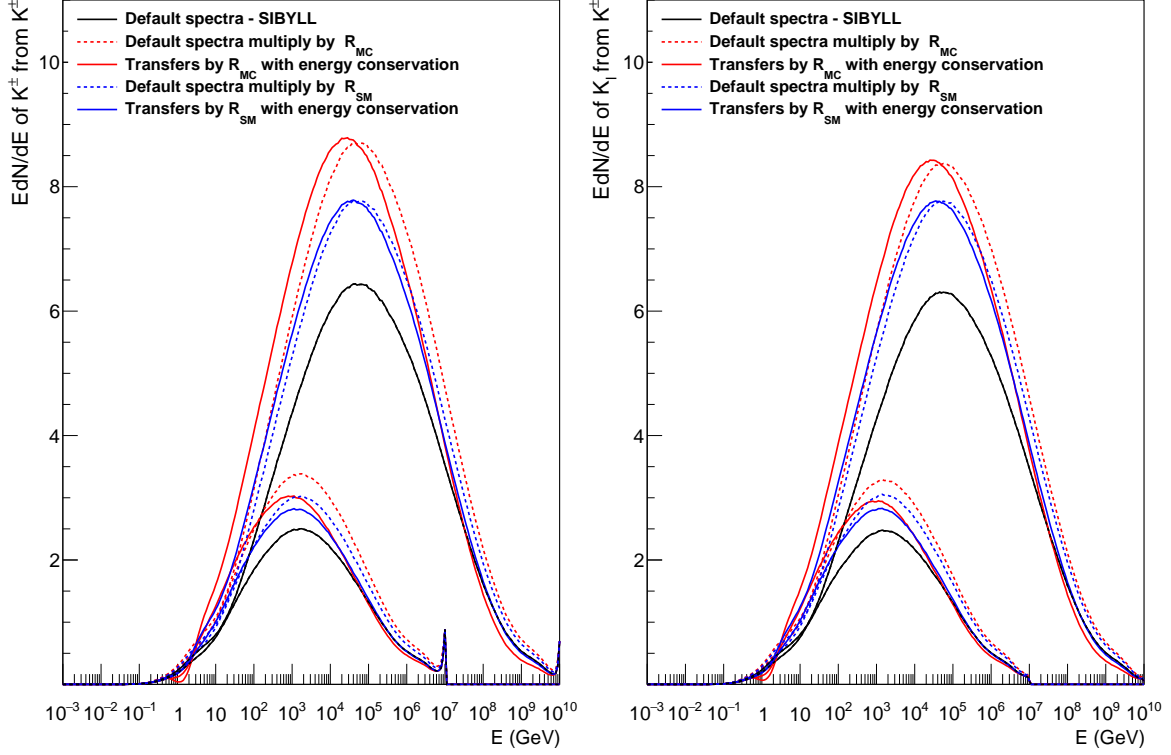


Figure 51: Spectrum of K^\pm (left) and K_l (right) for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation

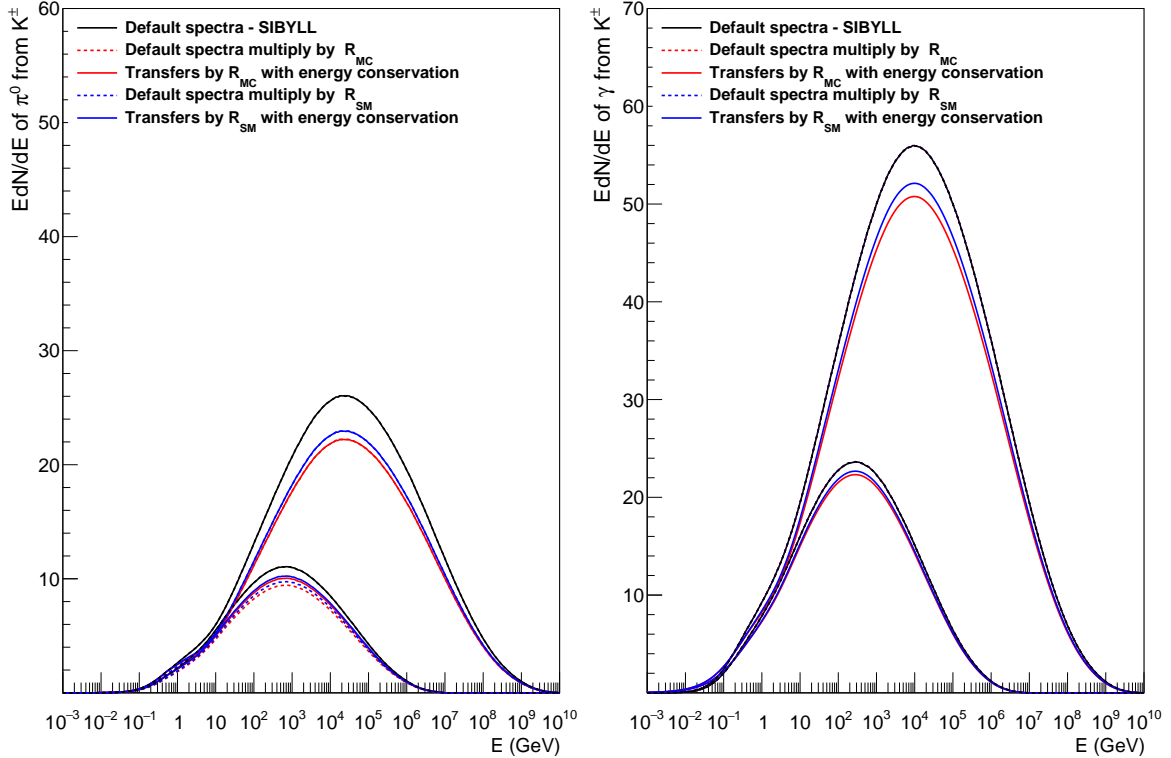


Figure 52: Spectrum of π^0 and gammas for K^\pm +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

SIBYLL - K_l +air interaction

Protons, neutrons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to kaons. The transfers are made bin by bin from ≈ 0.1 GeV up to $\approx 0.5E_0$, where E_0 is the kaon energy in the interaction.

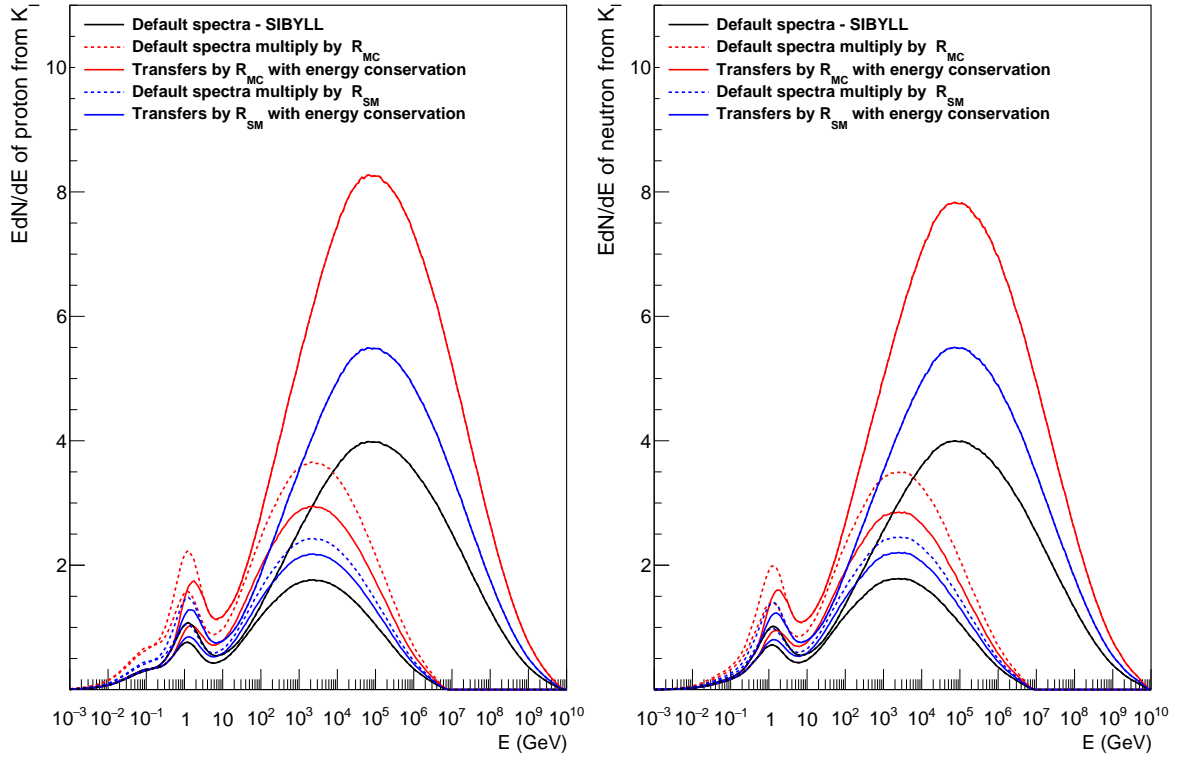


Figure 53: Spectrum of proton (left) and neutron (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

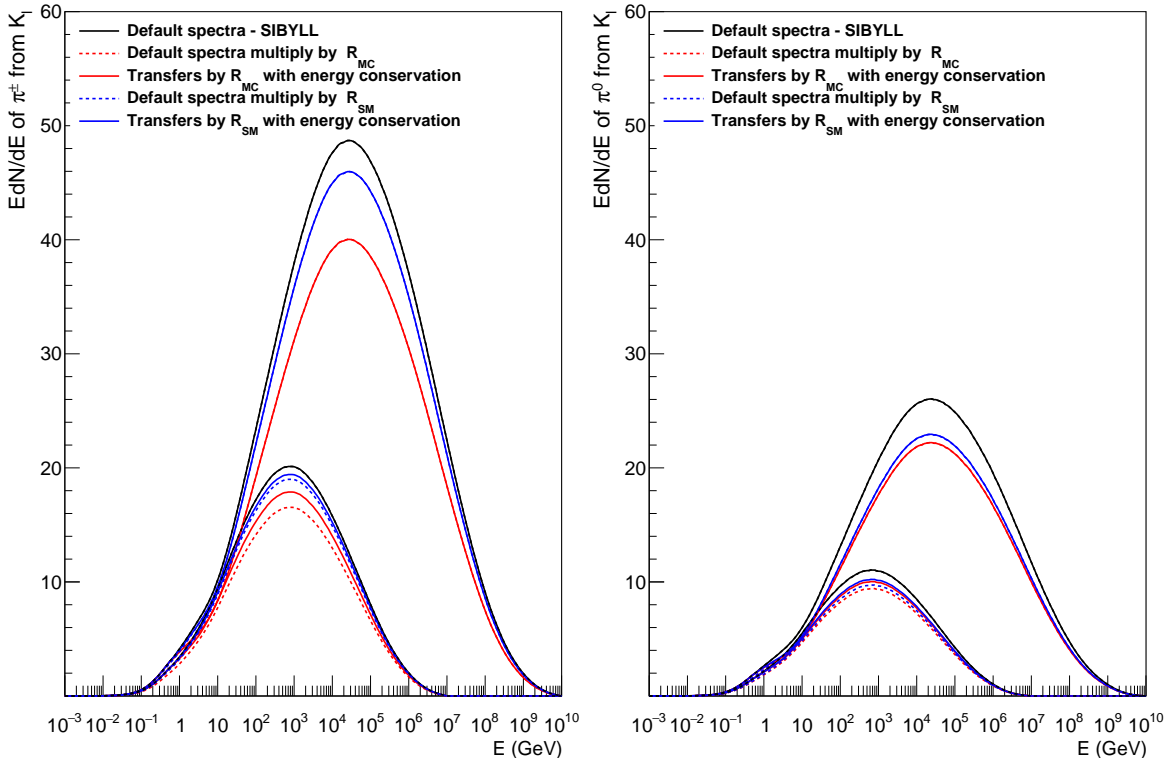


Figure 54: Spectrum of π^\pm (left) and π^0 (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

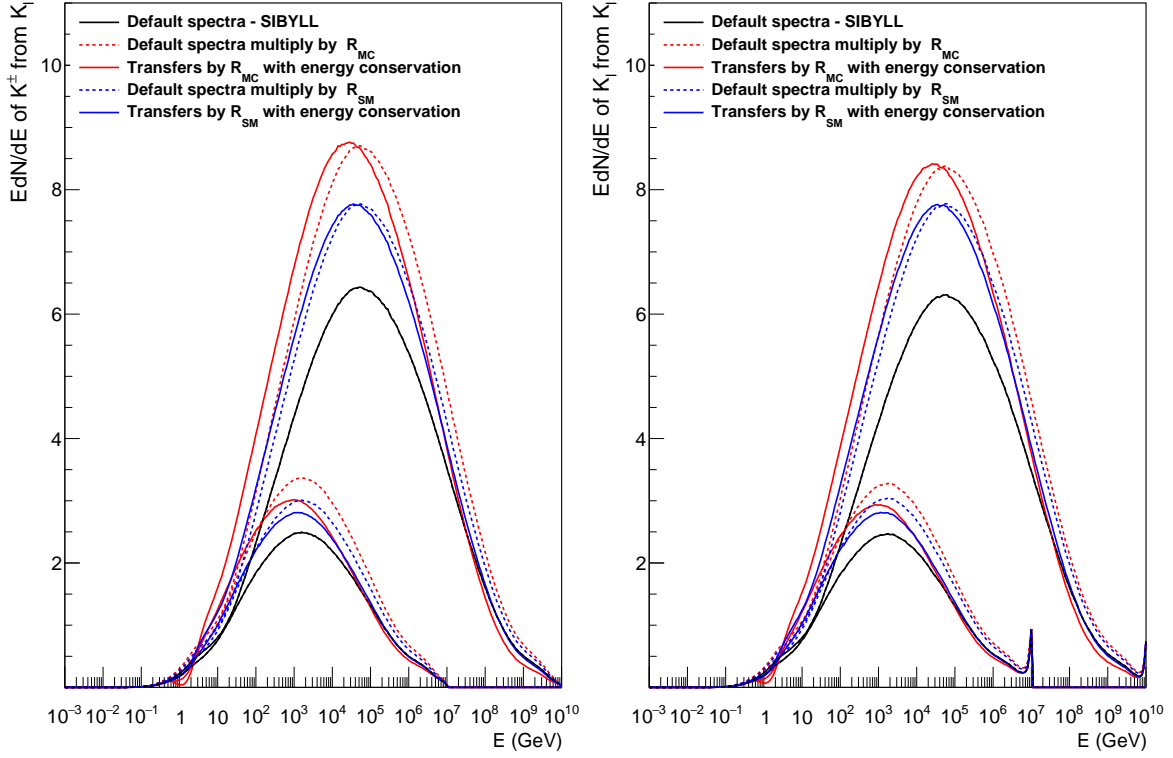


Figure 55: Spectrum of K^\pm (left) and K_l (right) for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation

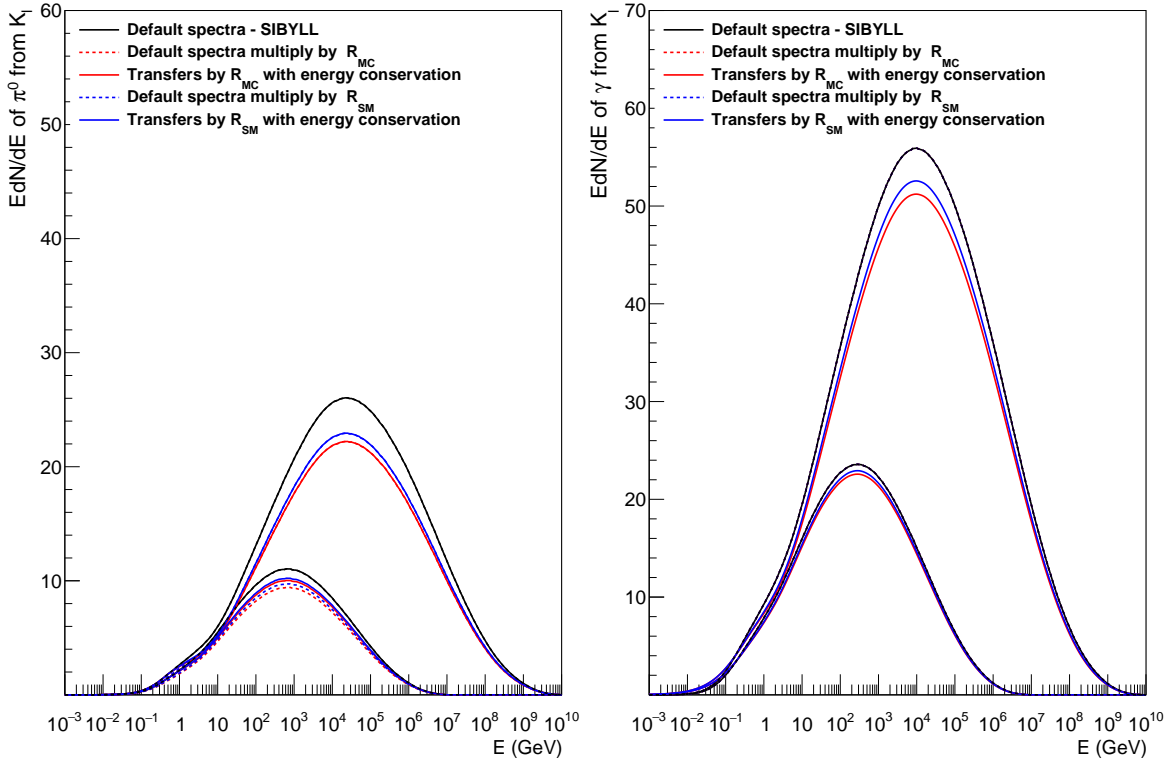


Figure 56: Spectrum of π^0 and gammas for K_l +air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

SIBYLL - n+air interaction

Kaons and pions spectra are scaled by their respective R_{MC} and R_{SM} taking/giving the energy from/to protons and neutrons bin by bin in the whole energy range.

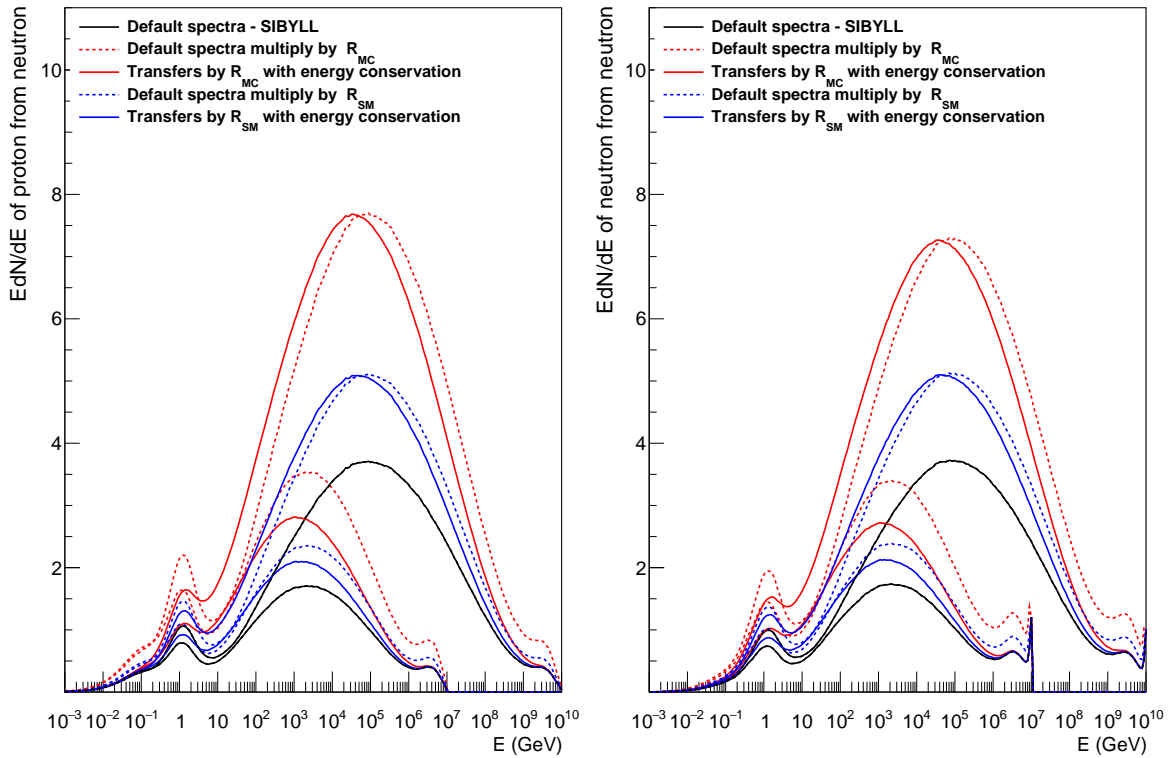


Figure 57: Spectrum of proton (left) and neutron (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation

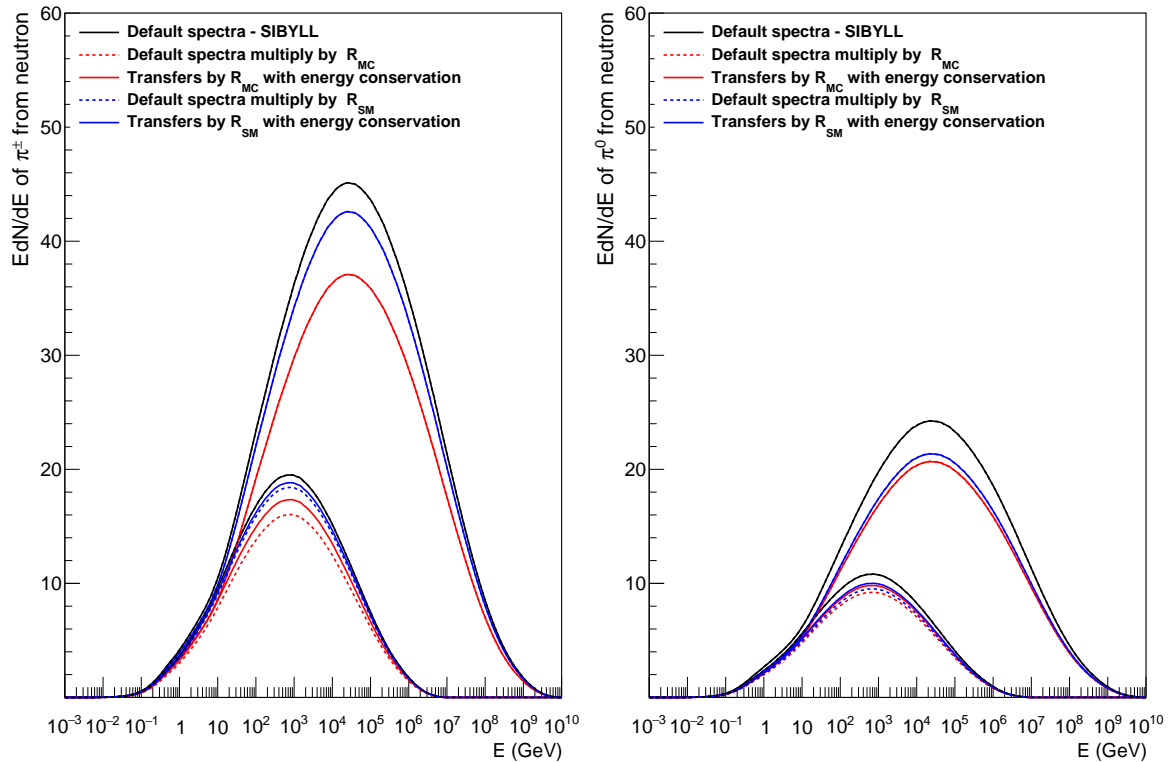


Figure 58: Spectrum of π^\pm (left) and π^0 (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

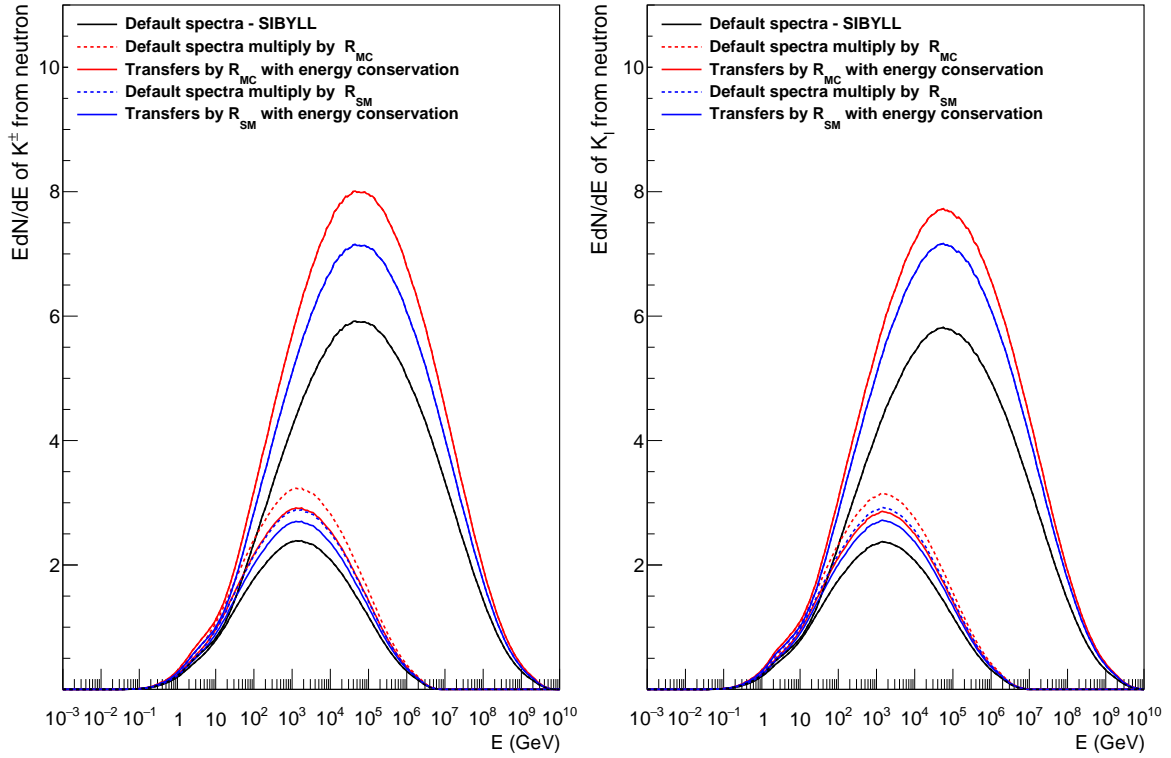


Figure 59: Spectrum of K^\pm (left) and K_l (right) for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap

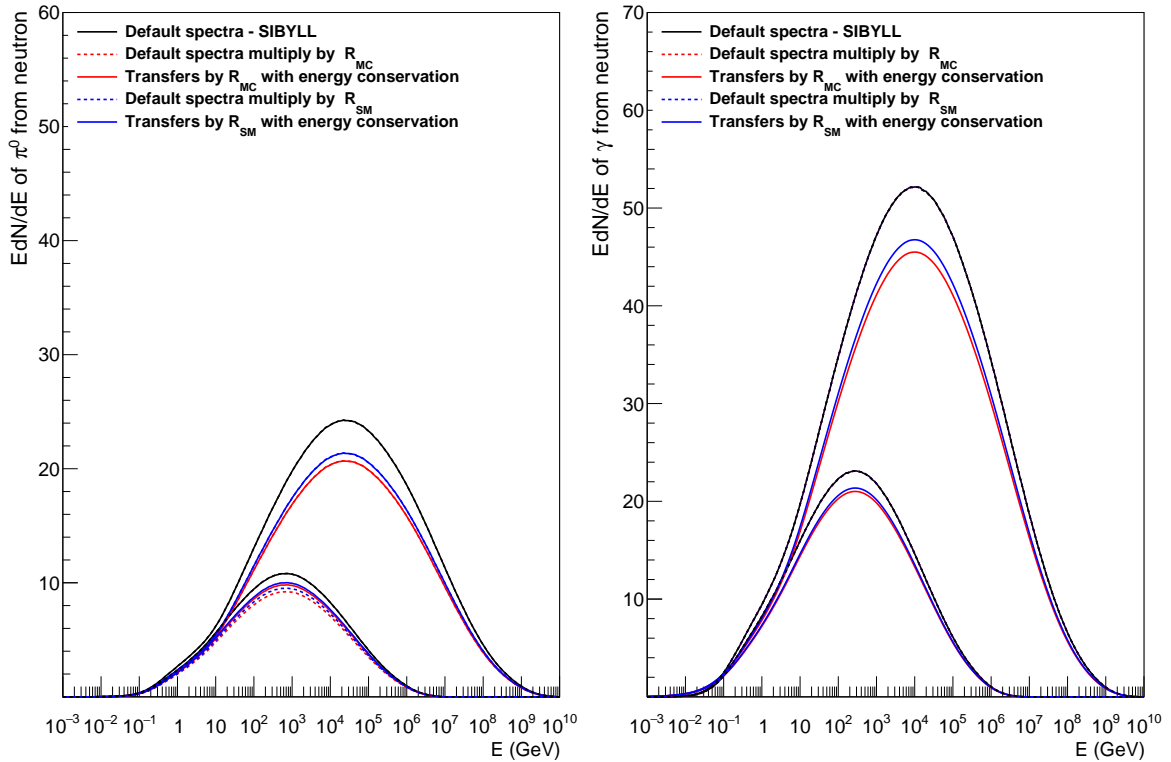


Figure 60: Spectrum of π^0 and gammas for n+air interaction applying R_{MC} and R_{SM} and energy conservation, in this case some lines overlap