

The probability density function of the arrival time of light

14. 08. 2020

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1. Introduction

The general topology of a muon or shower producing light that is detected on a PMT is shown in Figure 1. The muon or shower direction is pointed along the z -axis and the PMT is located at position $(R, 0, 0)$. The zenith and azimuth angle of the orientation of the PMT are denoted by θ_φ and ϕ_φ , respectively. The compass refers to the orientation of the PMT when its axis lies within the $x-z$ plane (i.e. $\sin \phi_\varphi = 0$).

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Figure 1: Topology of a muon or shower producing light that is detected on a PMT. The muon or shower direction is pointed along the z -axis and the PMT is located at position $(R, 0, 0)$. The zenith and azimuth angle of the orientation of the PMT are denoted by θ_φ and ϕ_φ , respectively. The compass refers to the orientation of the PMT when its axis lies within the $x-z$ plane (i.e. $\sin \phi_\varphi = 0$).

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Figure 2: Topology of a muon or shower producing light that is detected on a PMT. The muon or shower direction is pointed along the z -axis and the PMT is located at position $(R, 0, 0)$. The zenith and azimuth angle of the orientation of the PMT are denoted by θ_φ and ϕ_φ , respectively. The compass refers to the orientation of the PMT when its axis lies within the $x-z$ plane (i.e. $\sin \phi_\varphi = 0$).

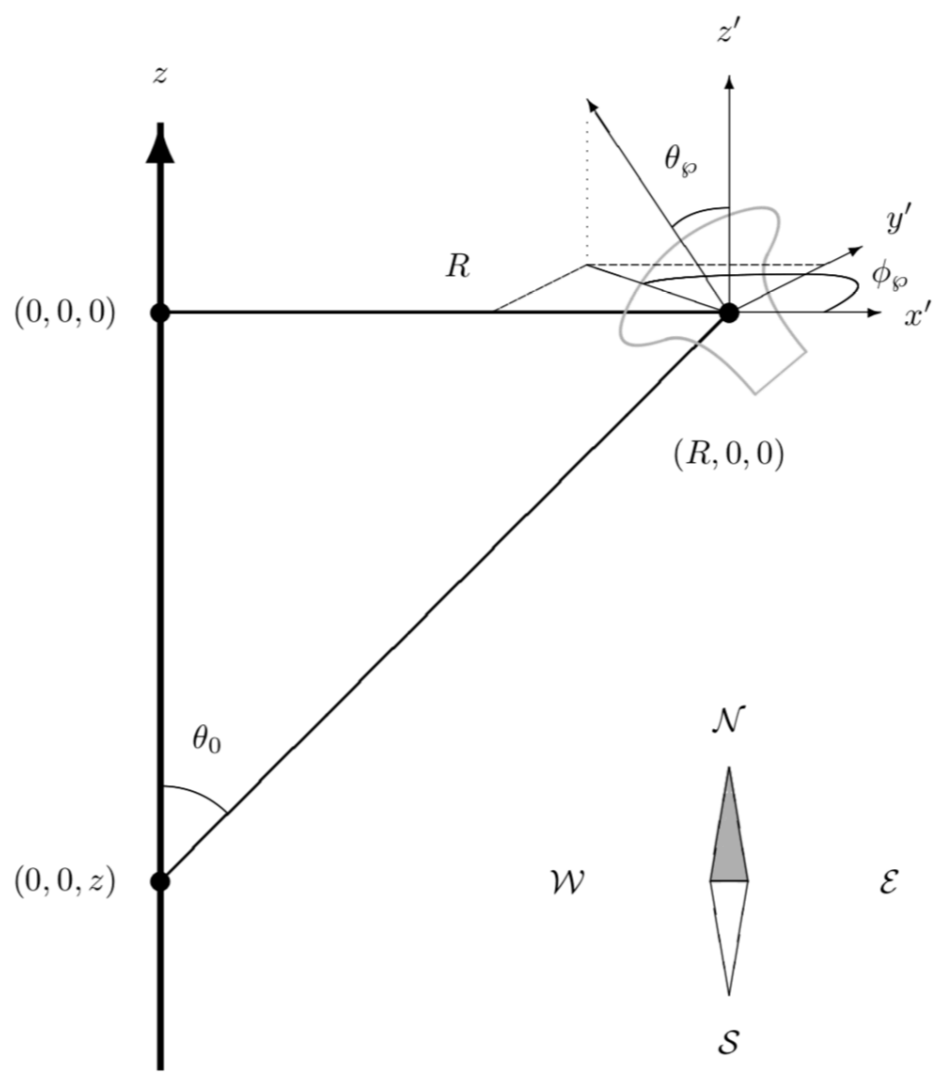


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