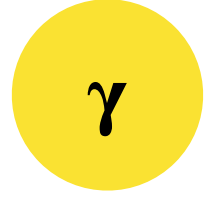


フェルミ粒子

ゲージ粒子

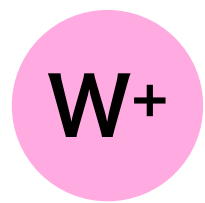
フェルミ粒子			ゲージ粒子	
クォーク	第1世代	第2世代	第3世代	電磁気力
	<div>u</div> <div>アップ クォーク</div>	<div>c</div> <div>チャーム クォーク</div>	<div>t</div> <div>トップ クォーク</div>	
レプトン	<div>d</div> <div>ダウン クォーク</div>	<div>s</div> <div>ストレンジ クォーク</div>	<div>b</div> <div>ボトム クォーク</div>	強い力
	<div>e</div> <div>電子</div>	<div>μ</div> <div>ミュー粒子</div>	<div>τ</div> <div>タウ粒子</div>	
	<div>ν<sub>e</sub></div> <div>電子 ニュートリノ</div>	<div>ν<sub>μ</sub></div> <div>ミュー ニュートリノ</div>	<div>ν<sub>τ</sub></div> <div>タウ ニュートリノ</div>	弱い力
				ヒッグス粒子
				<div>H</div> <div>ヒッグス粒子</div>



光子



グルーオン



ウィークボソン

Pre-preparatory Phase

Main Preparatory Phase

Construction / Operation Phase

政府間議論

政府間交渉

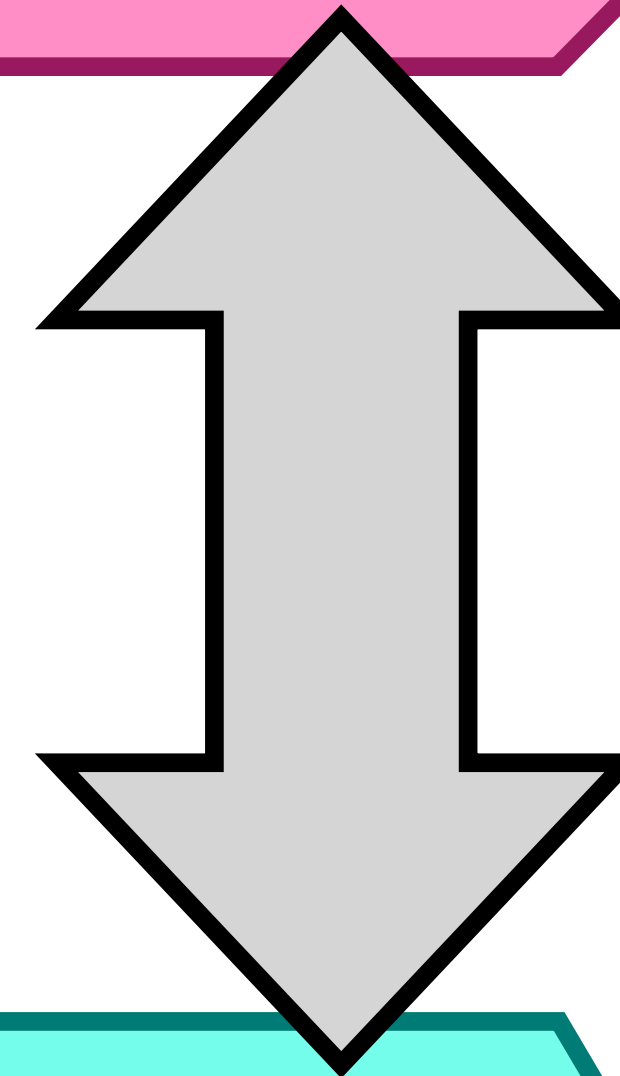
ILC Laboratory

European Strategy for  
Particle Physicsのアップデート

日本学術会議のマスタープラン

政府間交渉の開始

政府間合意



ILC準備研究所

Light-  
weight  
MoUs

Detailed  
MoUs

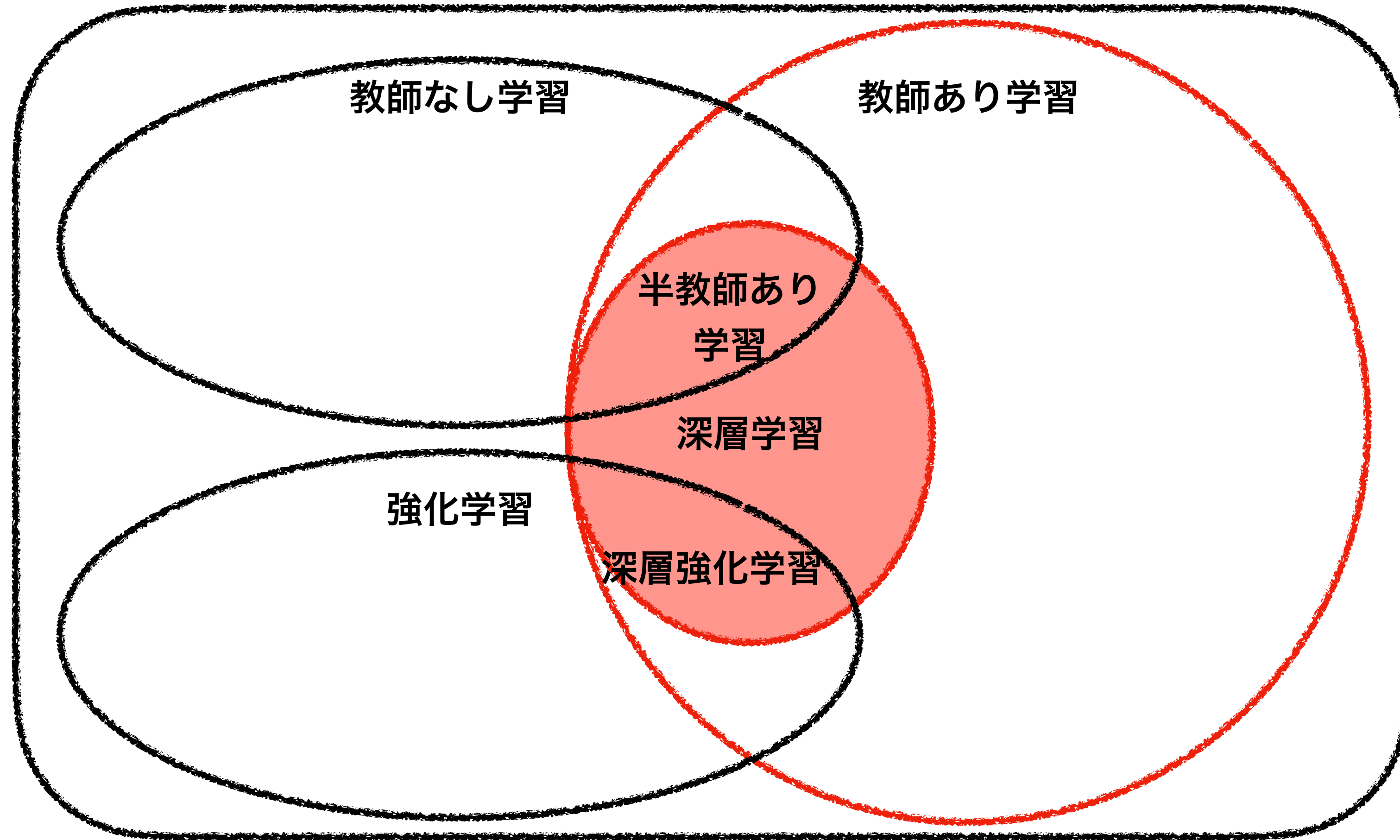
建設

運転

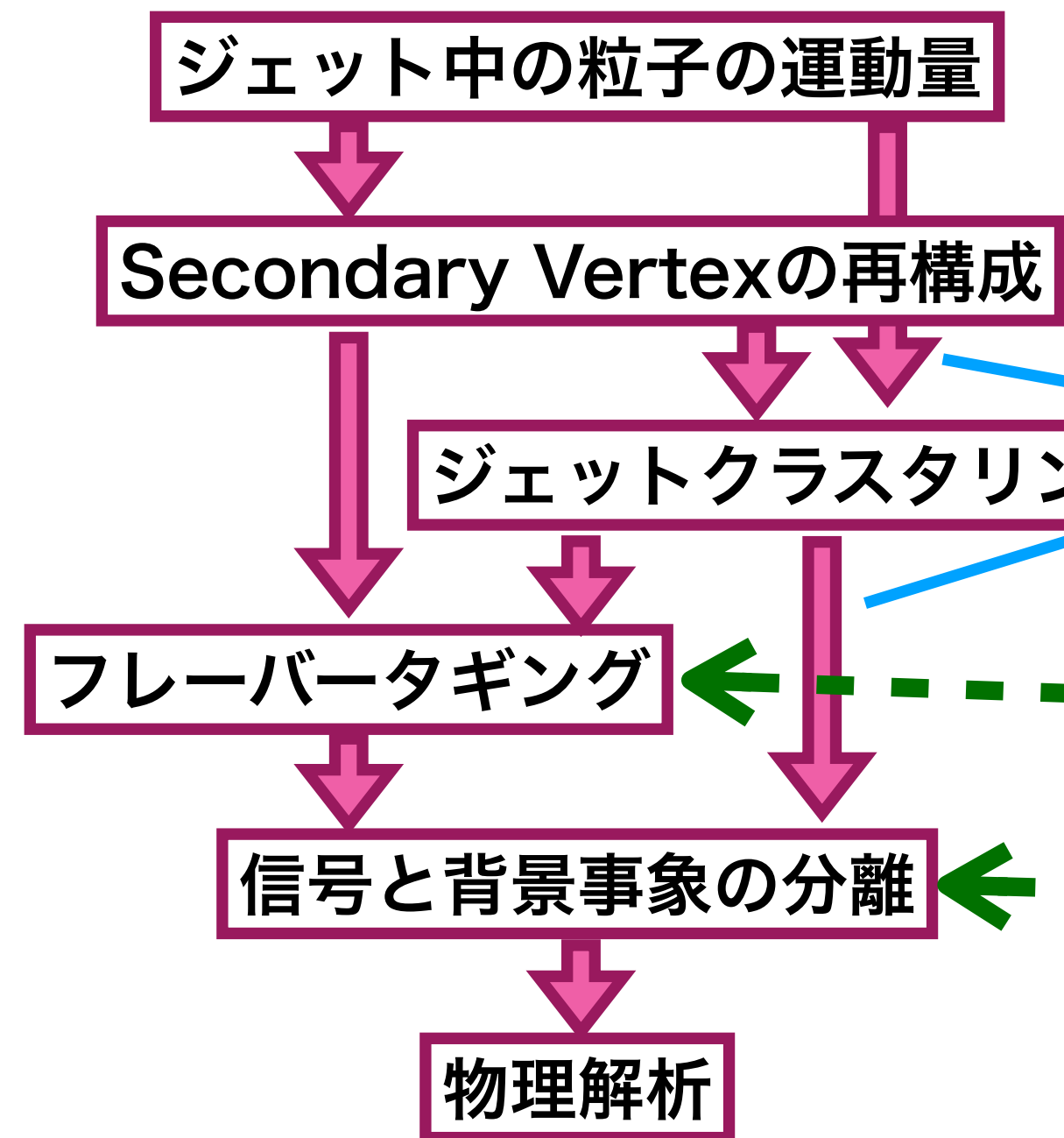
ILCの活動

- LCB / LCC
- KEK Planning Office for ILC  
etc.

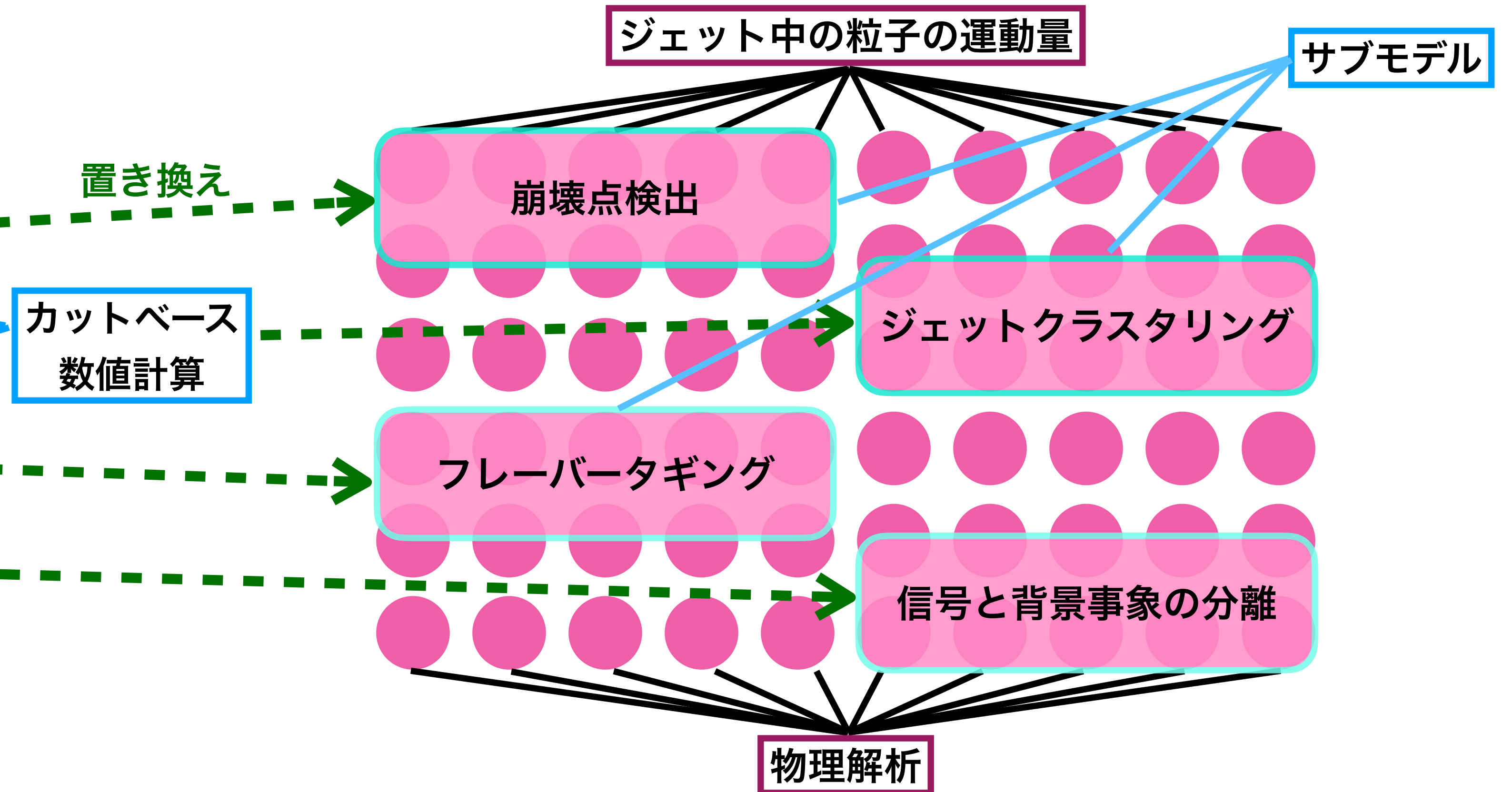
# 機械学習

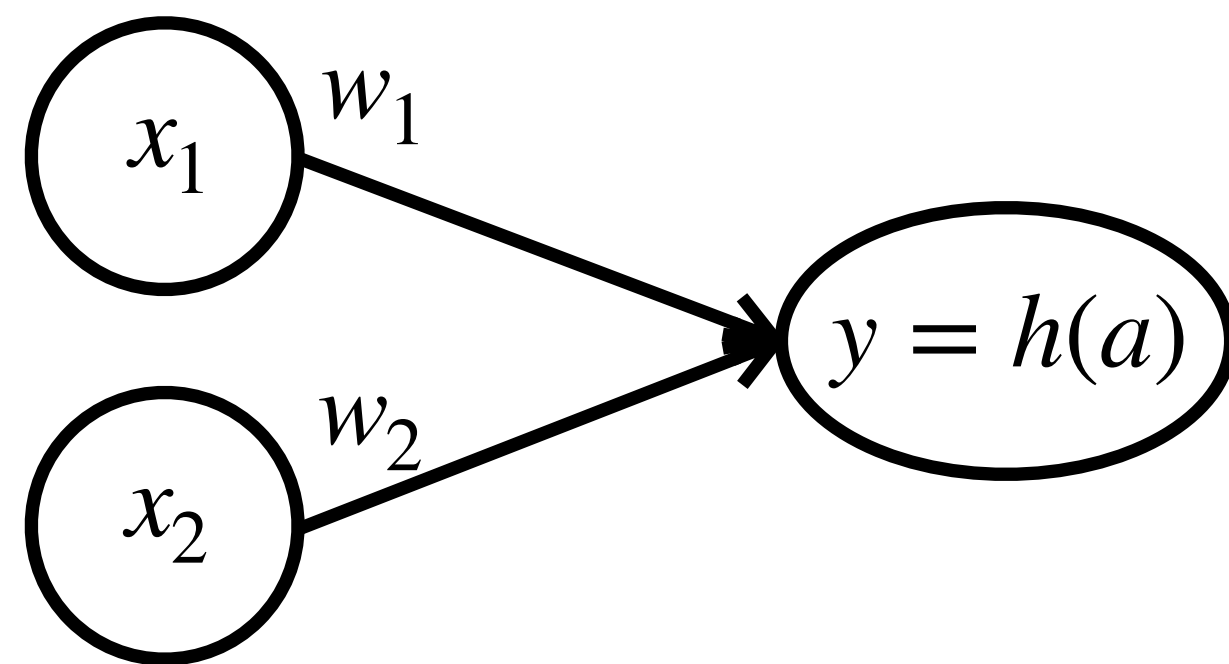


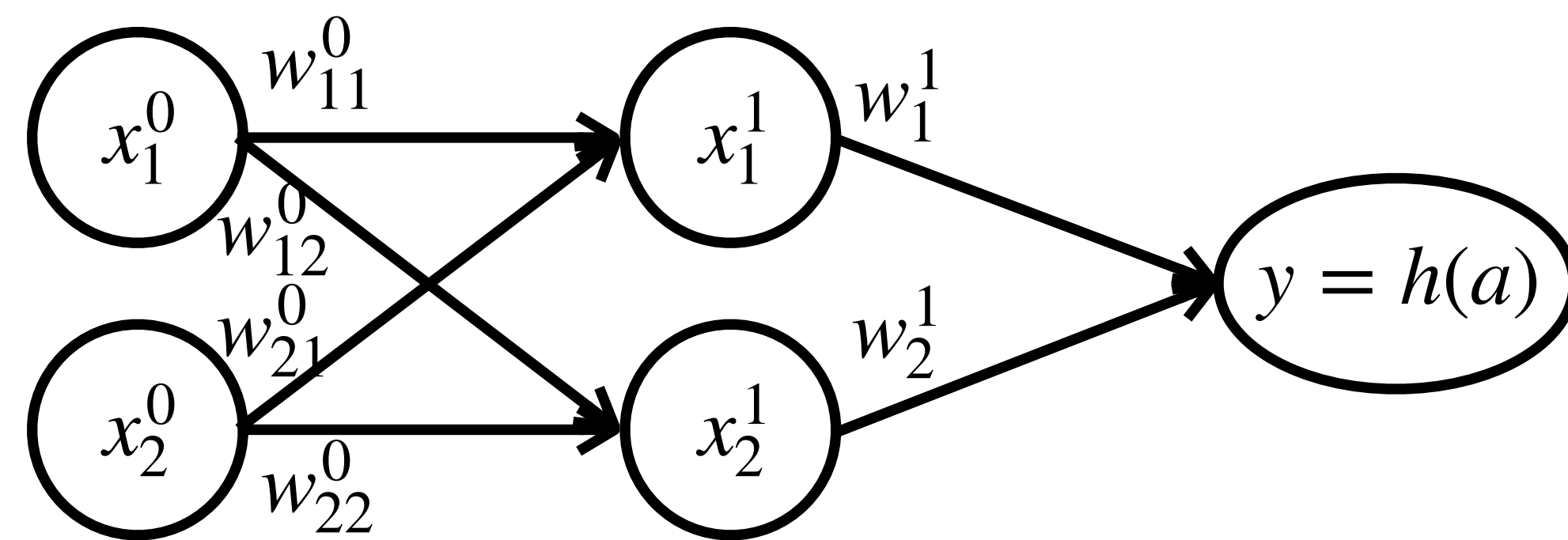
## 現行の手法



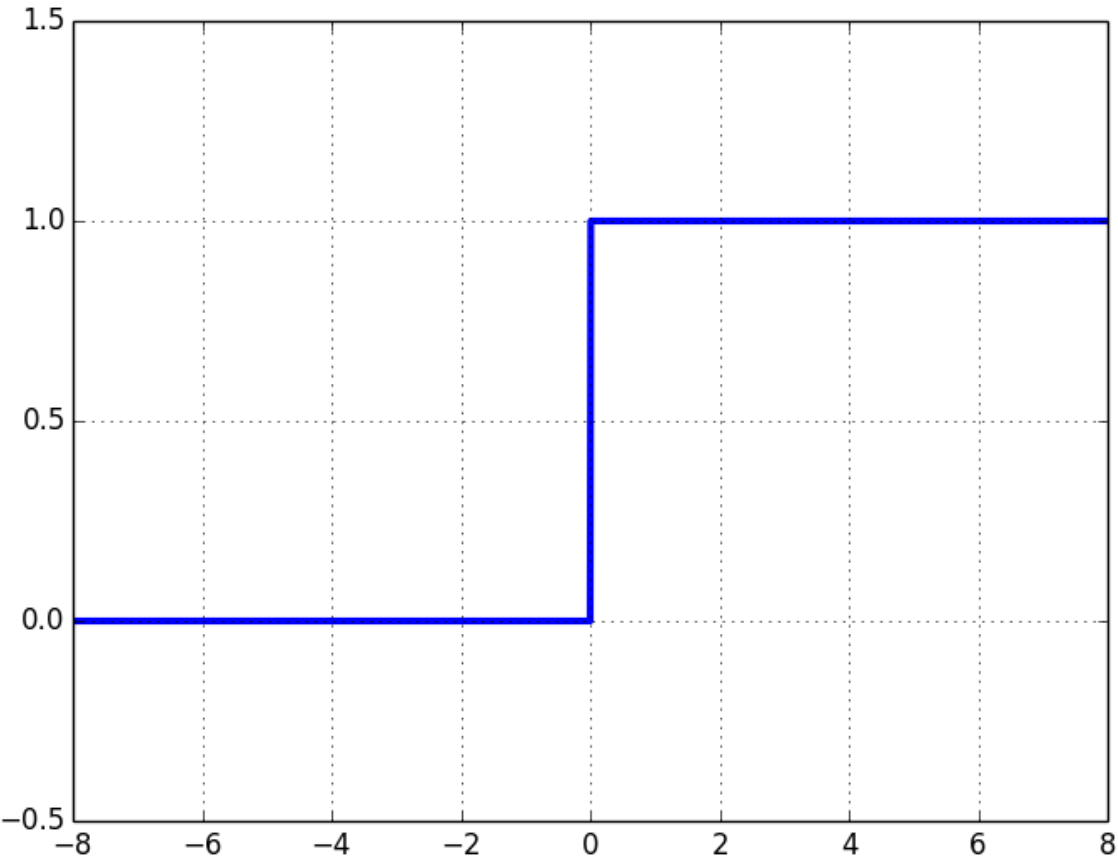
## 深層学習



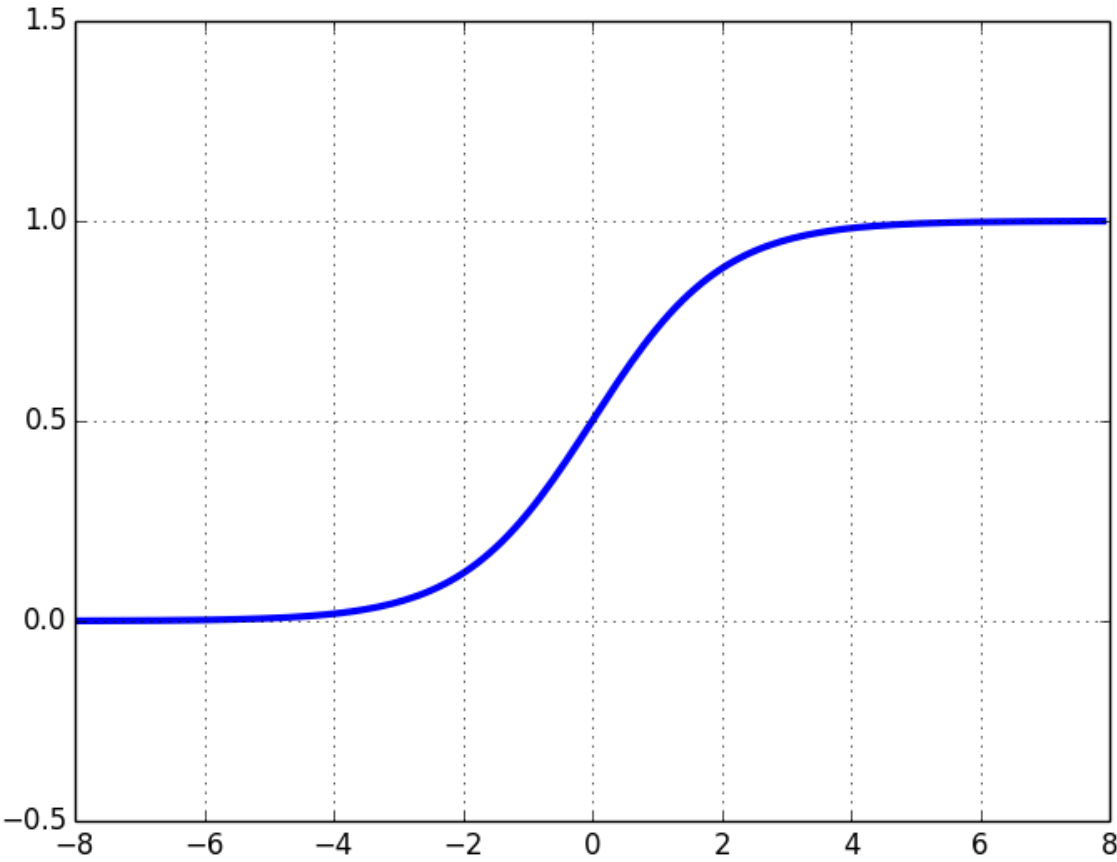




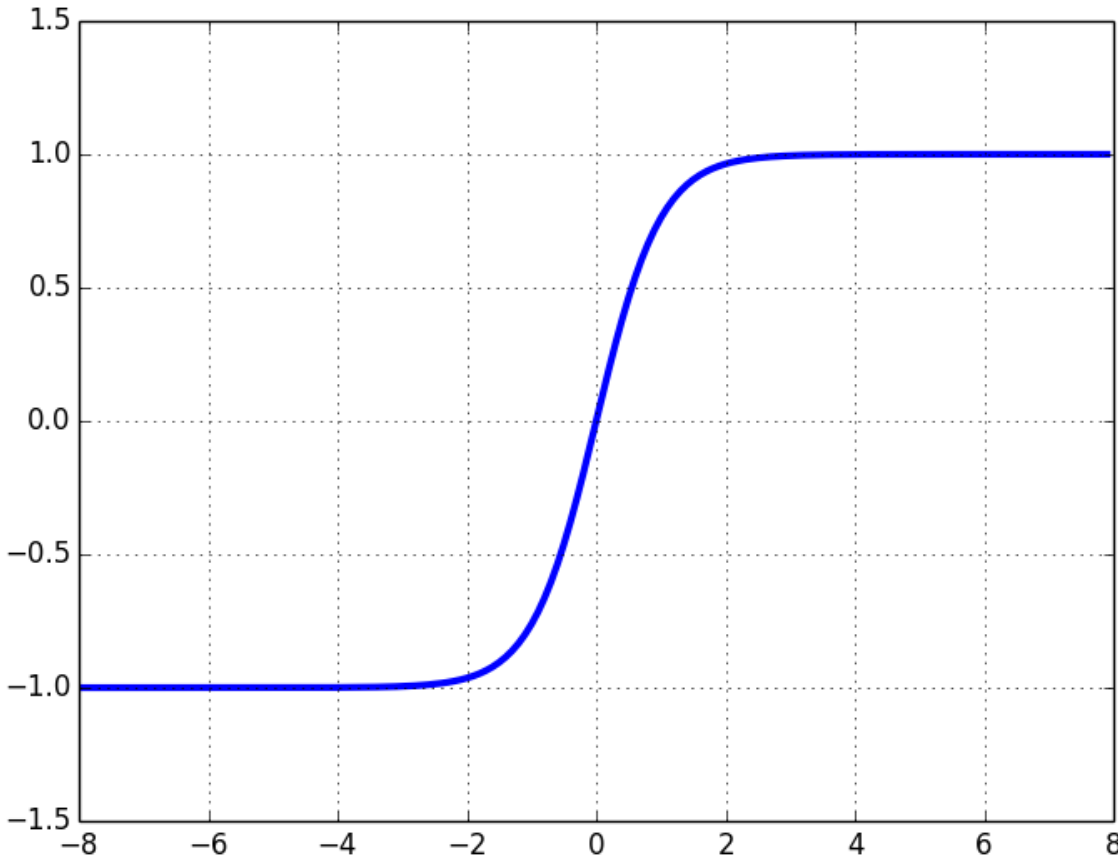
階段関数



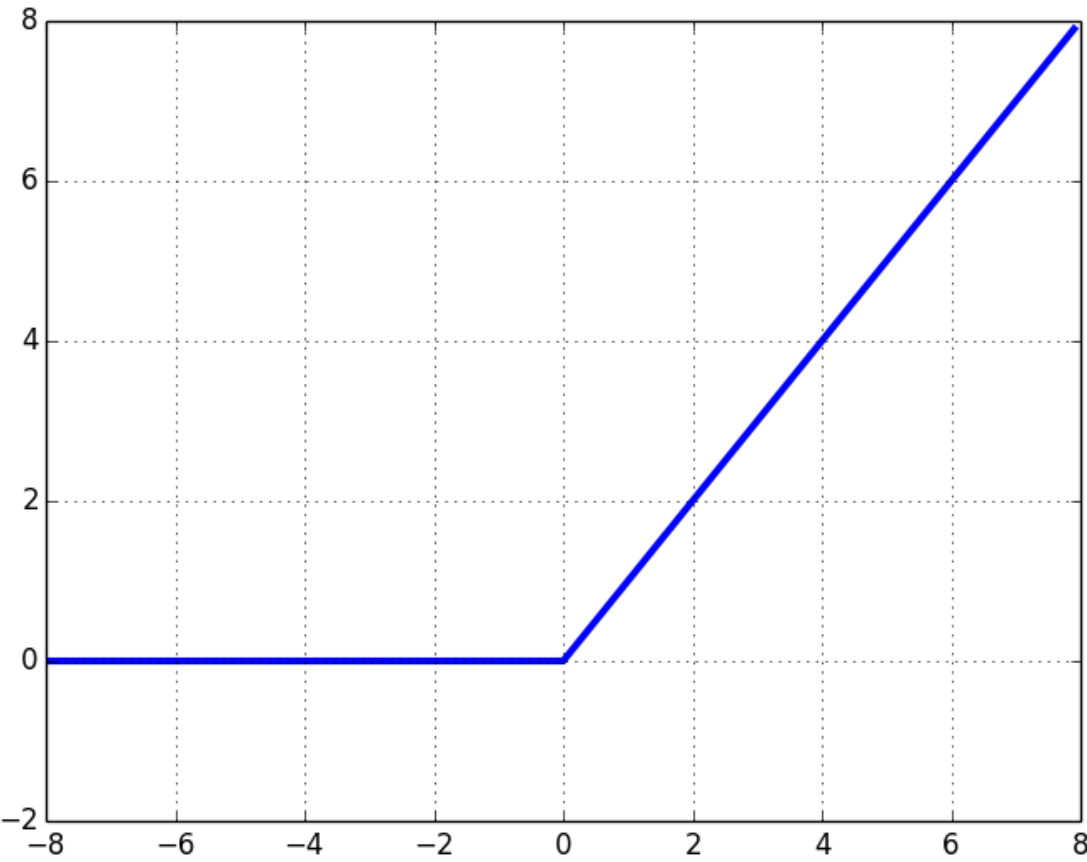
シグモイド関数

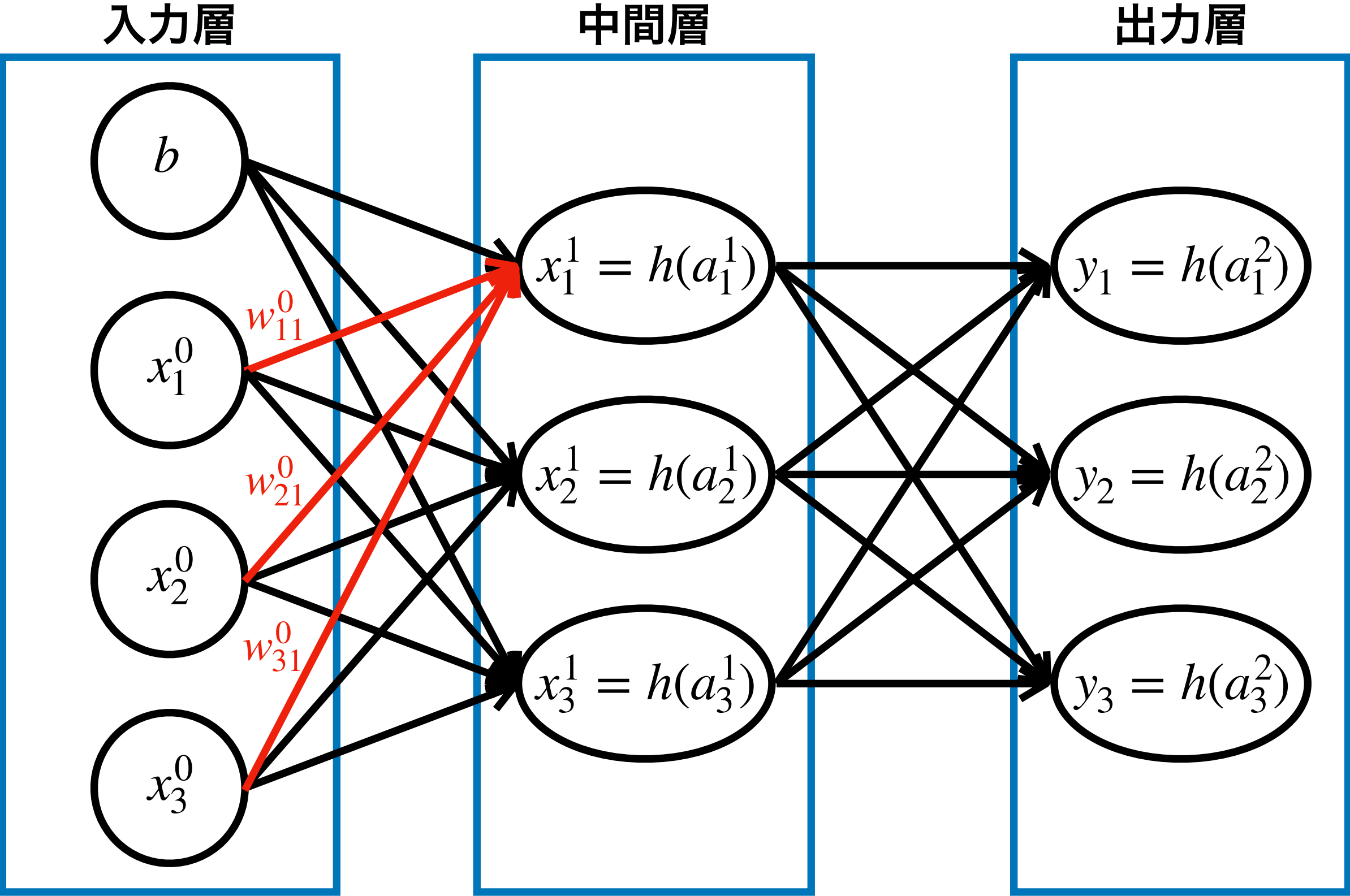


tanh関数

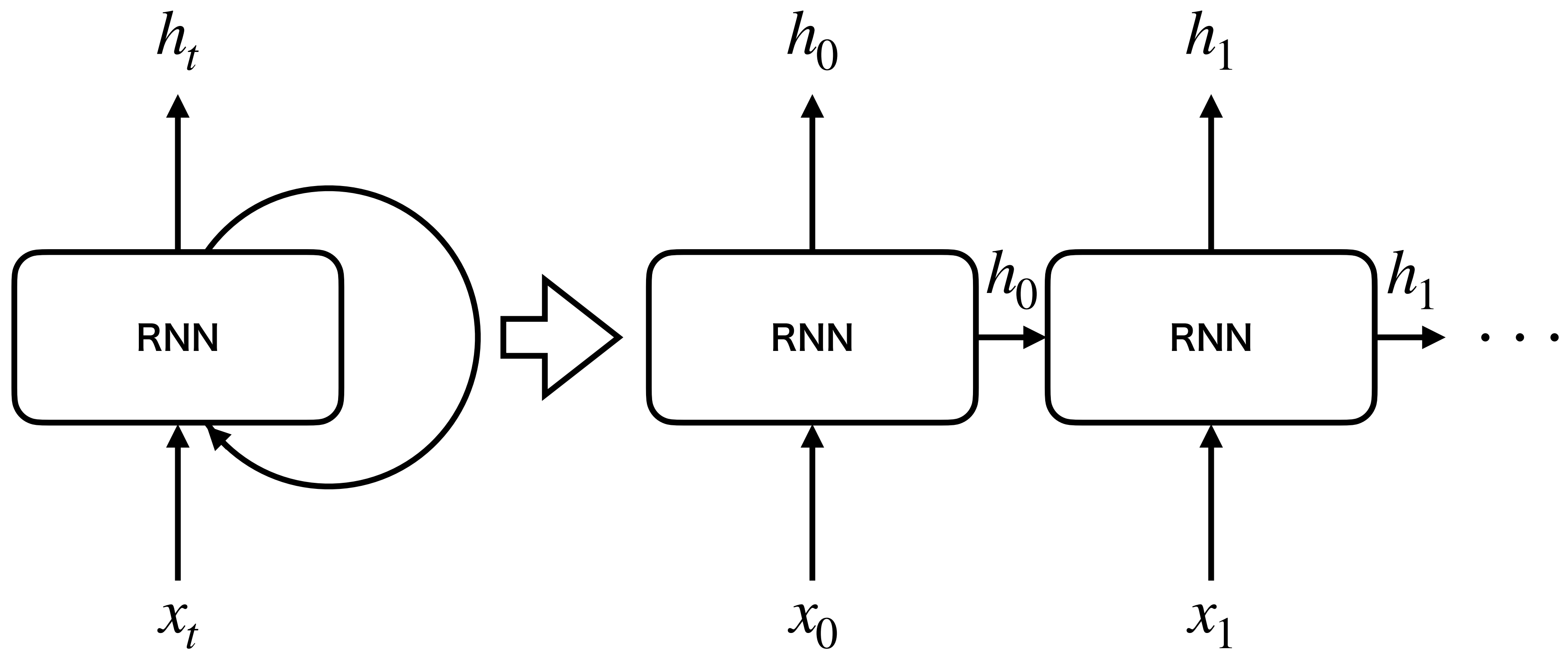


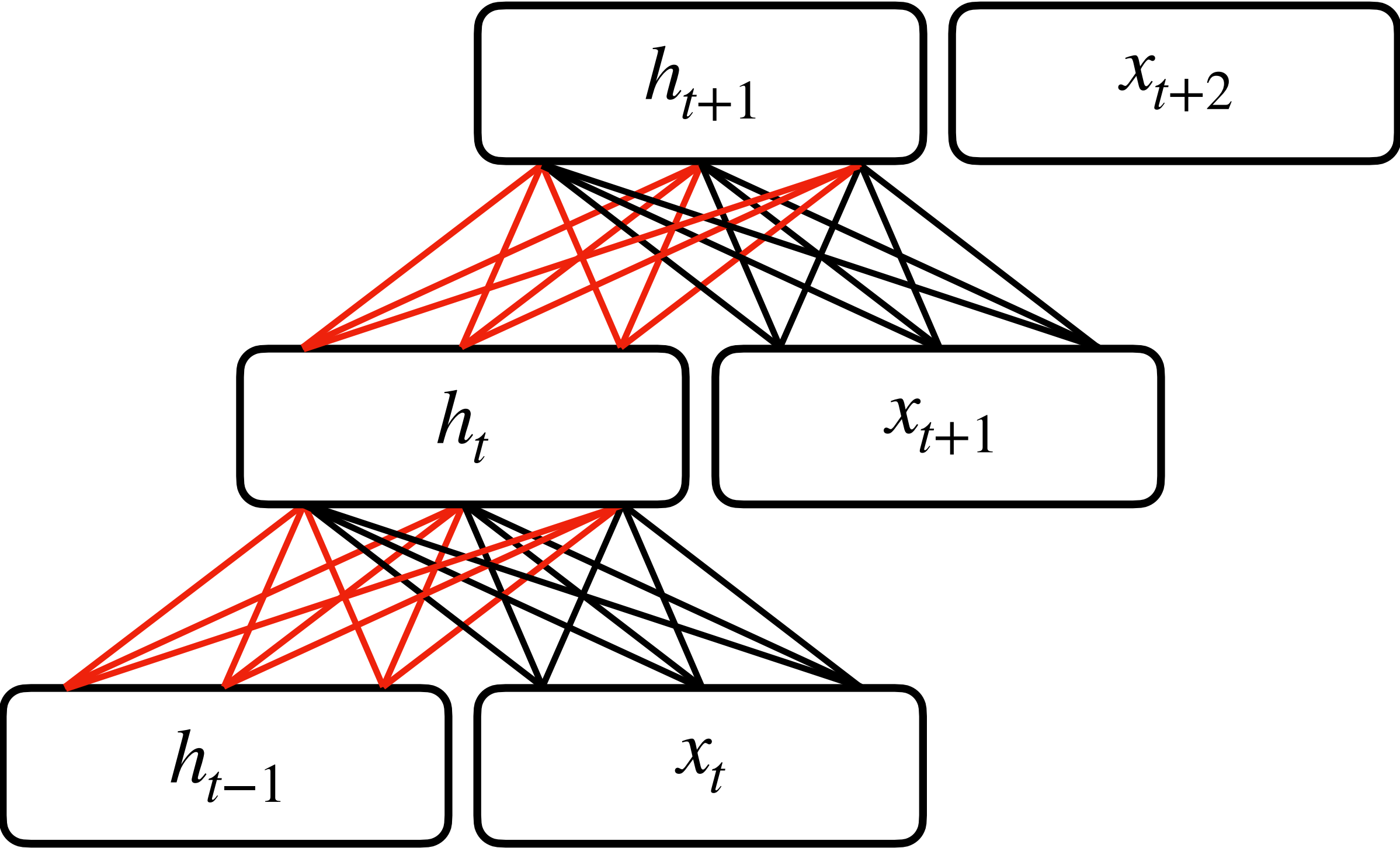
ReLU関数



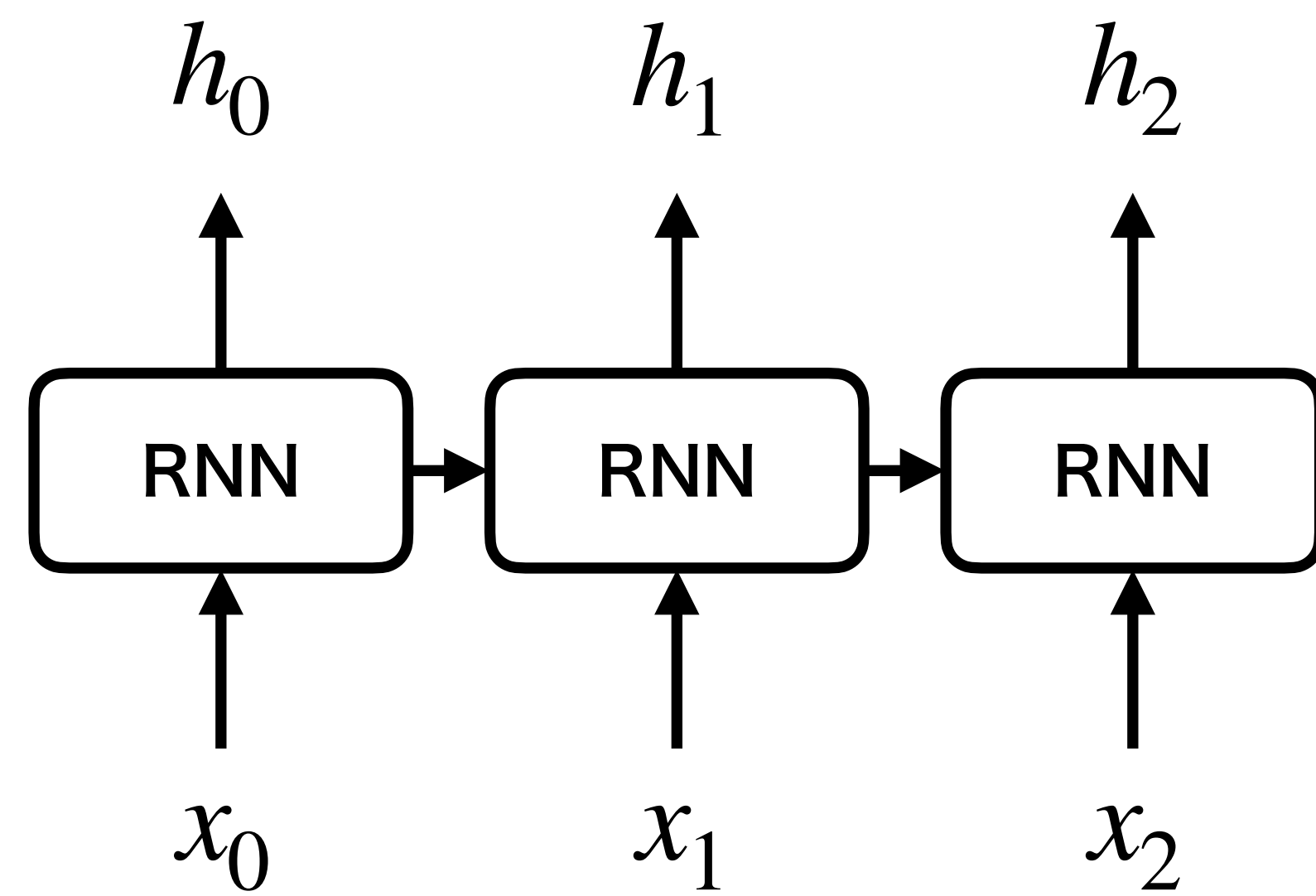




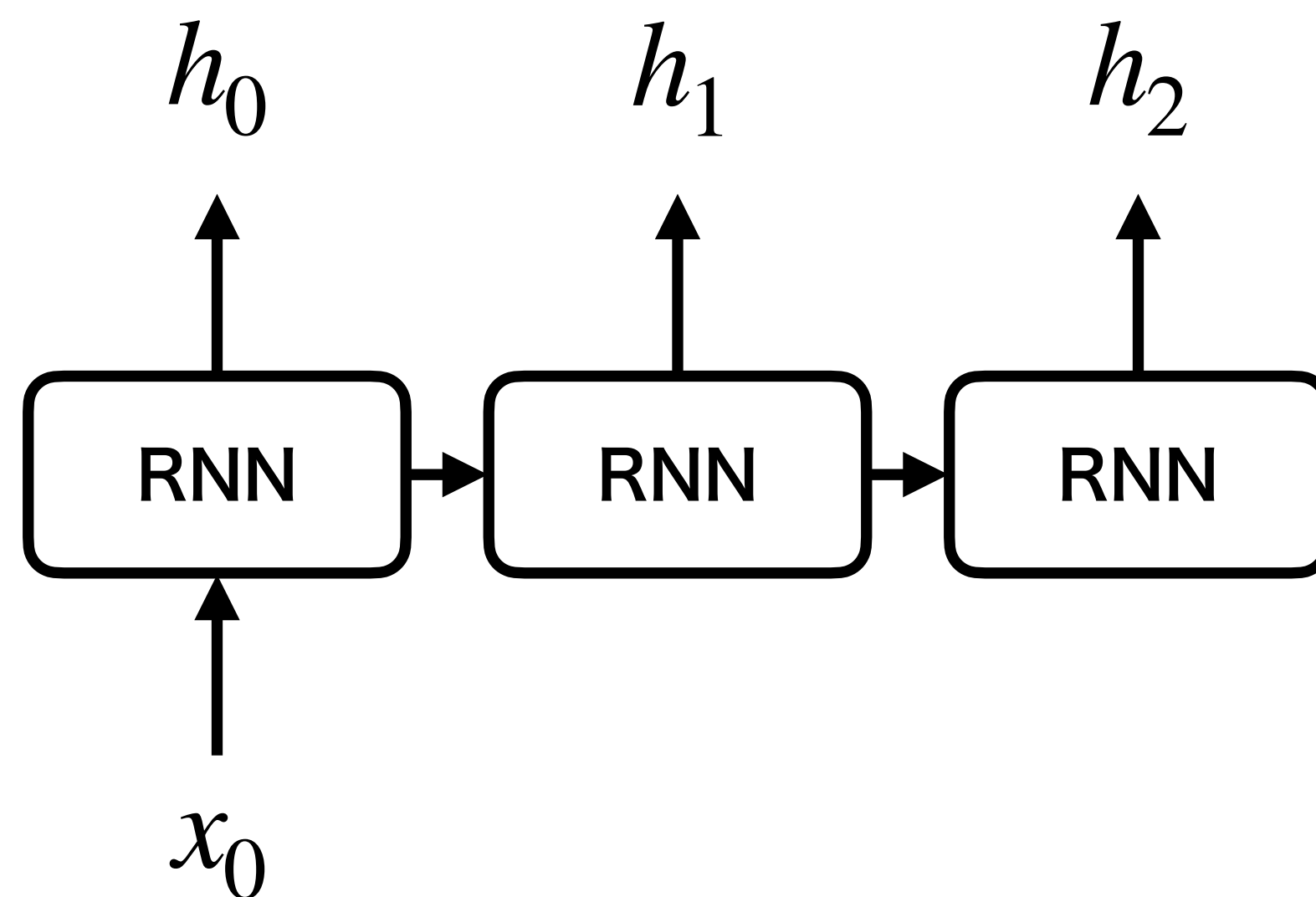




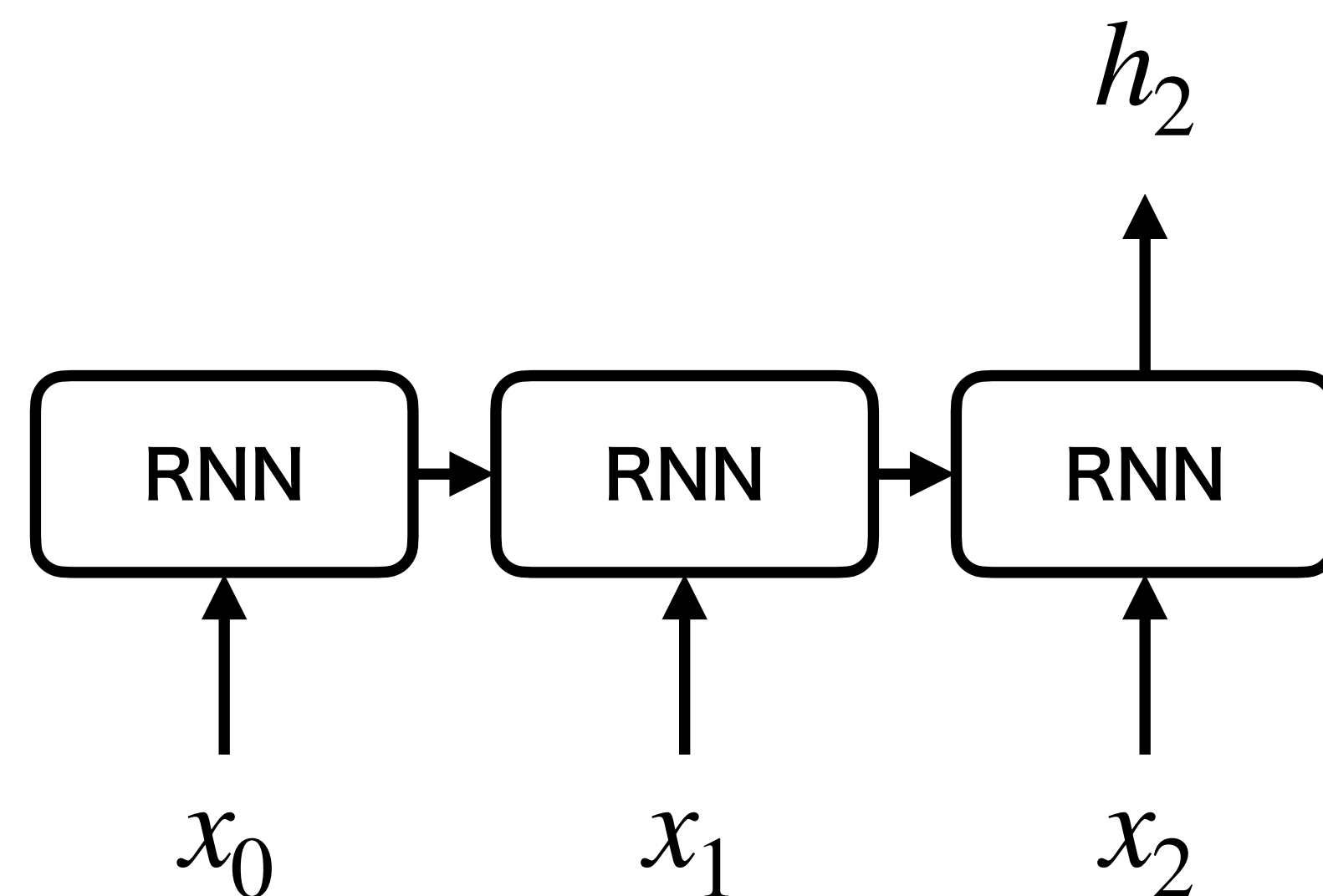
Many to Many

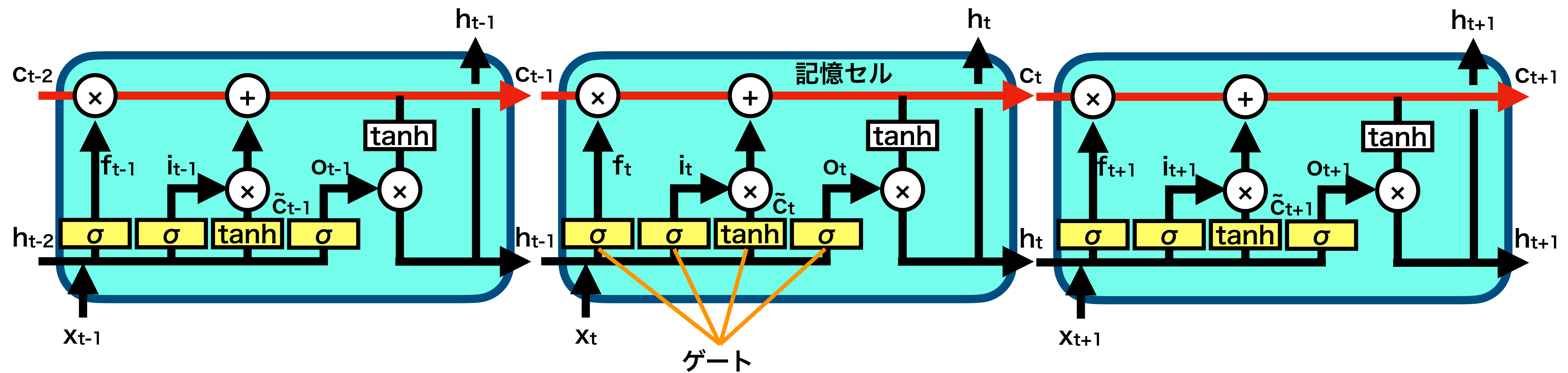


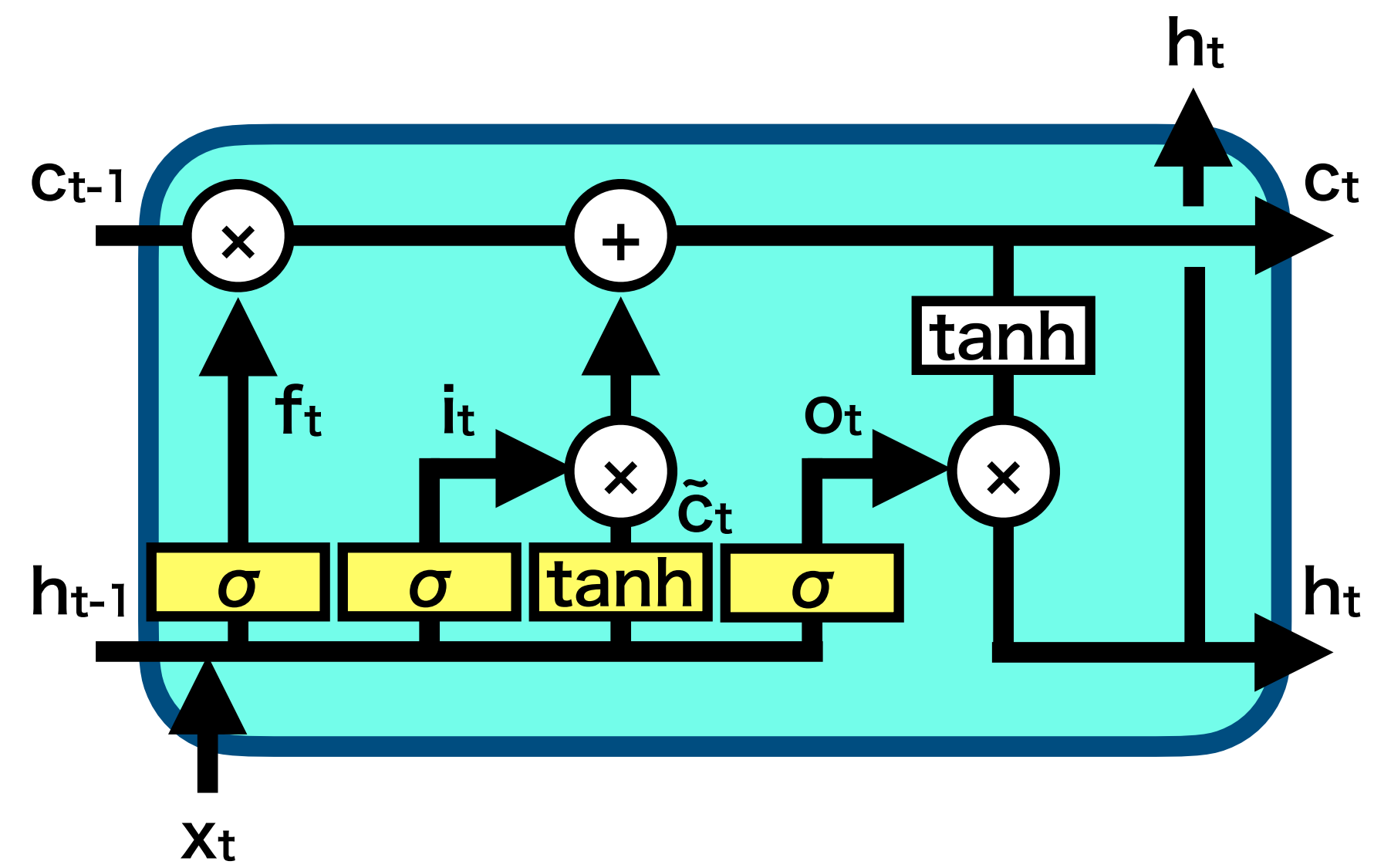
One to Many

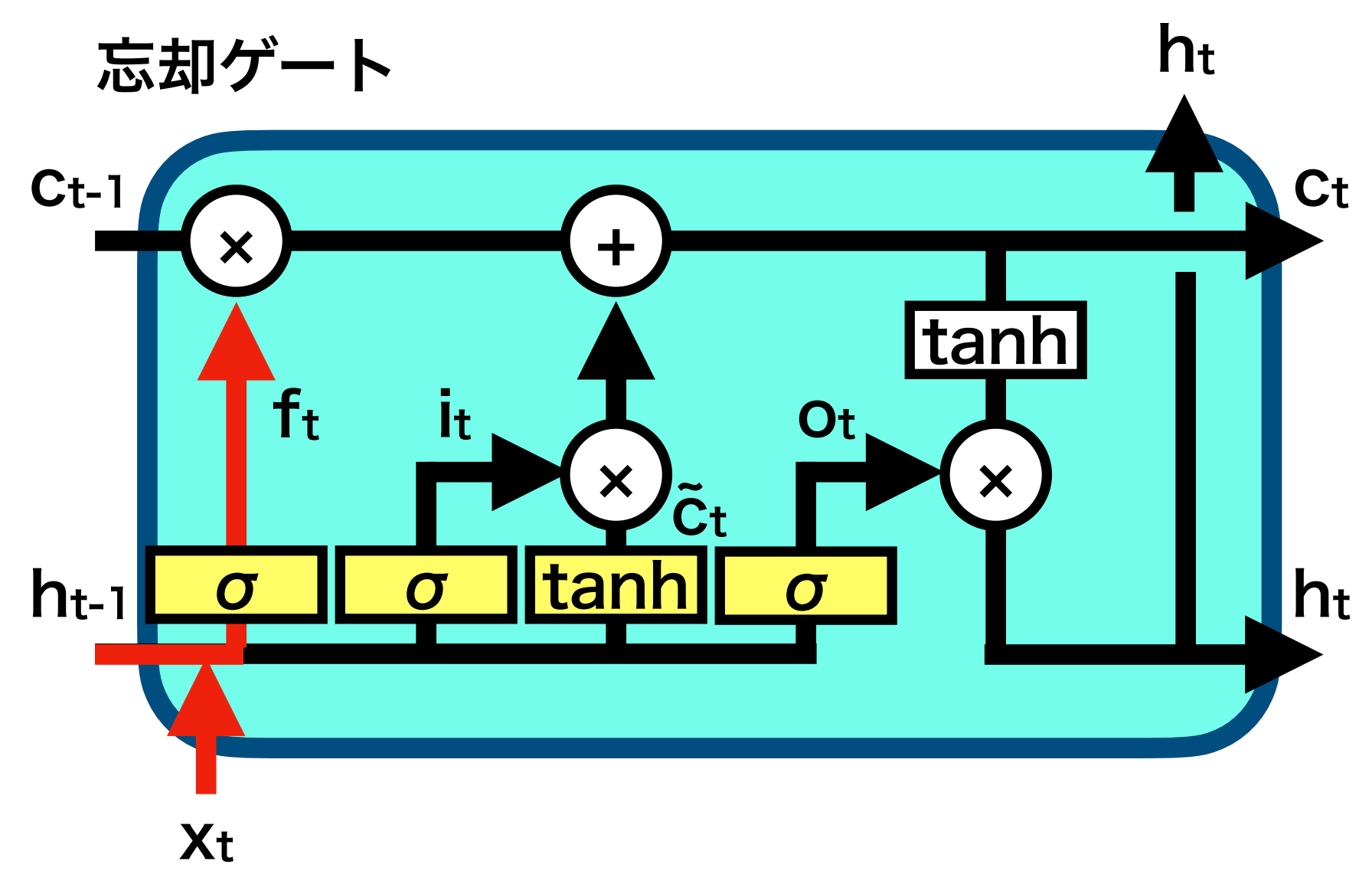


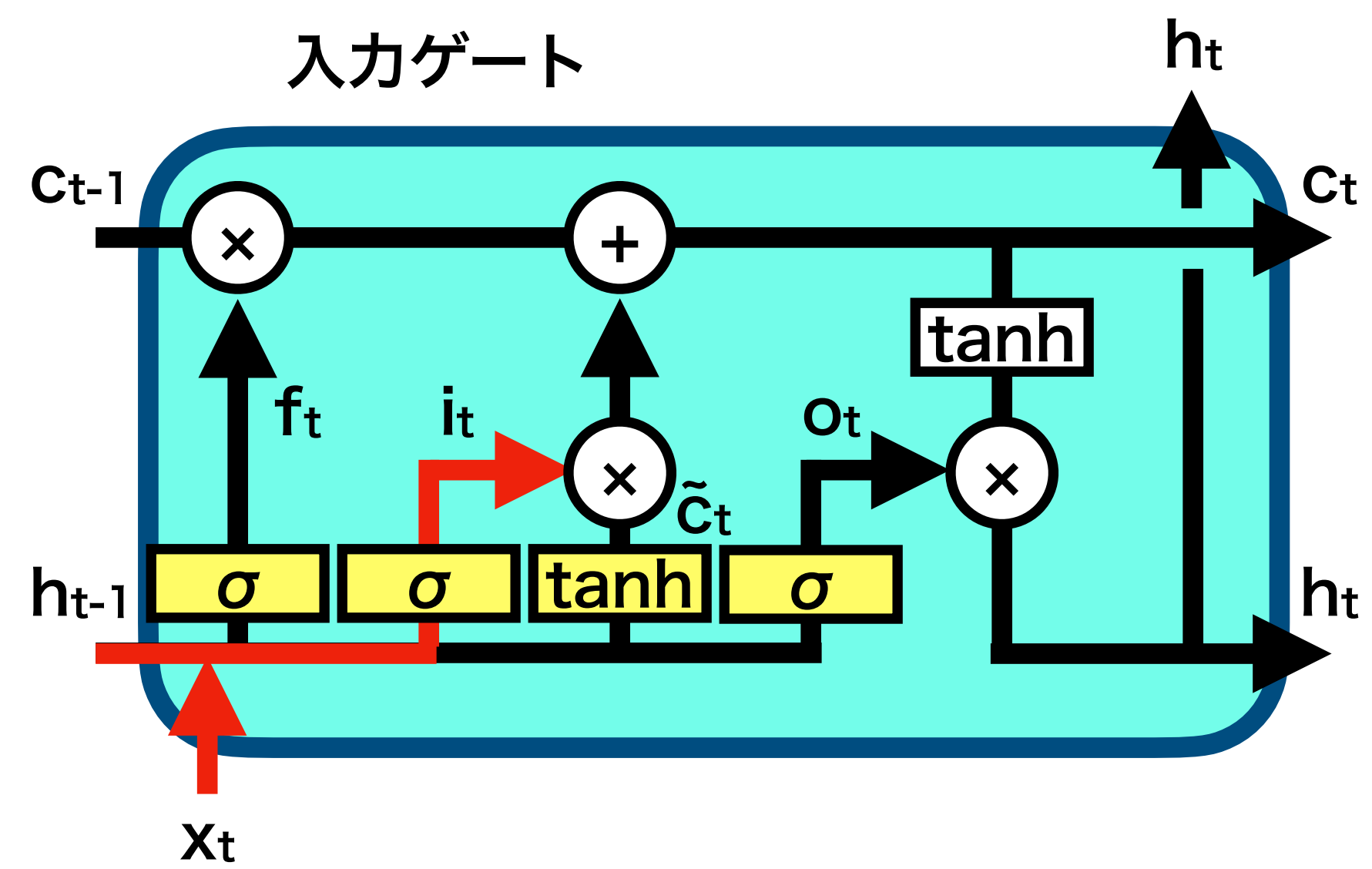
Many to One

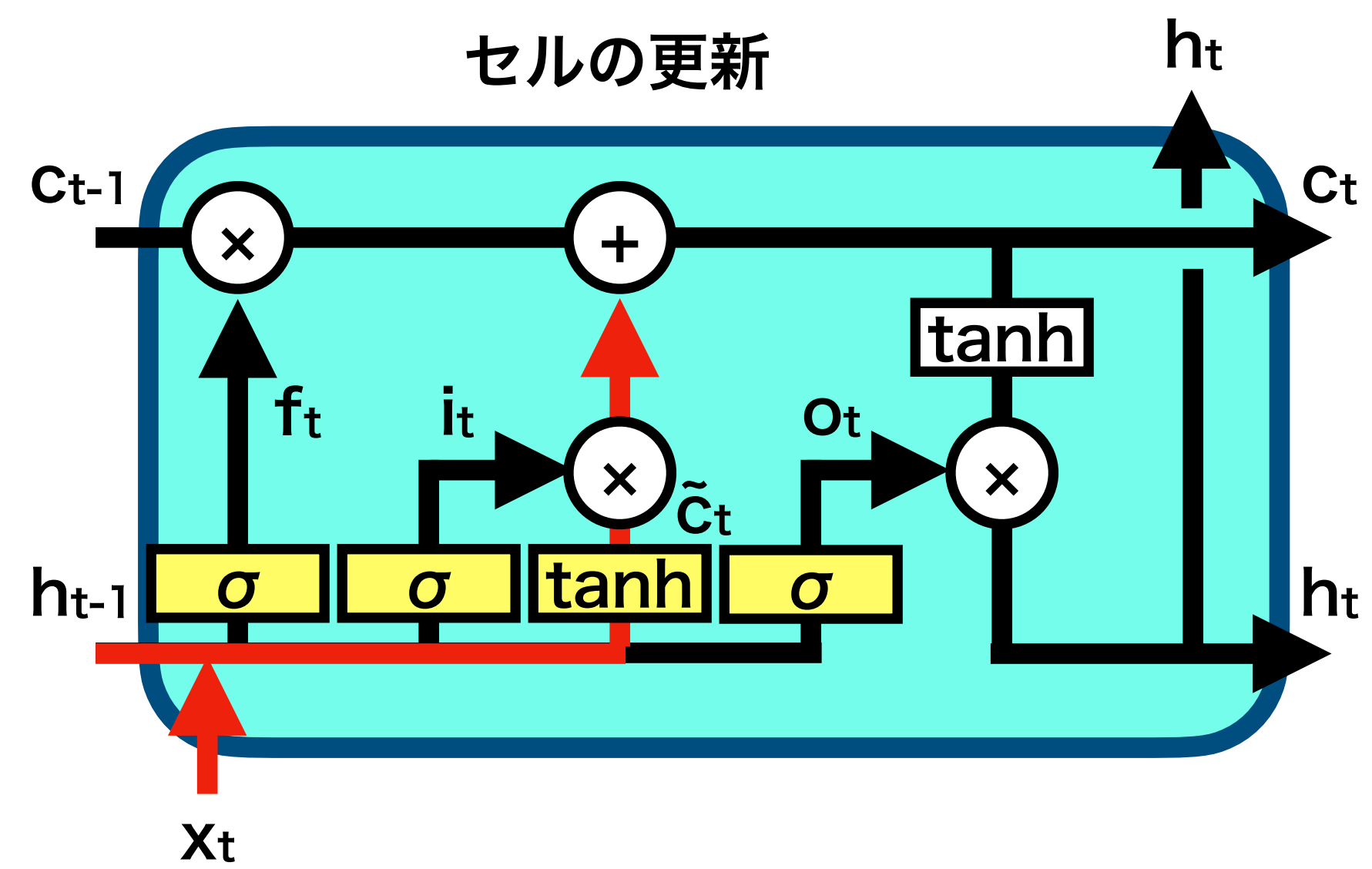




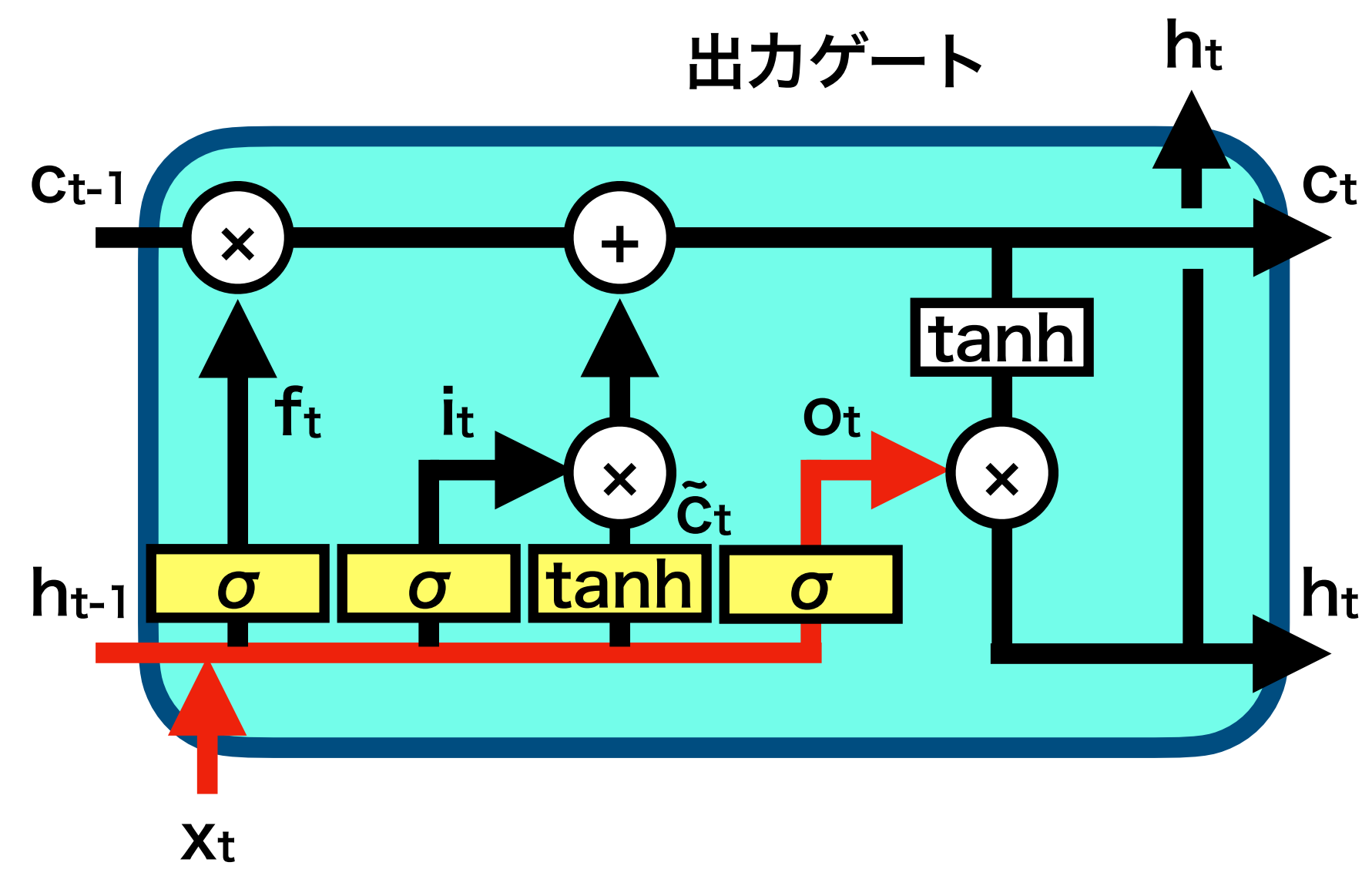


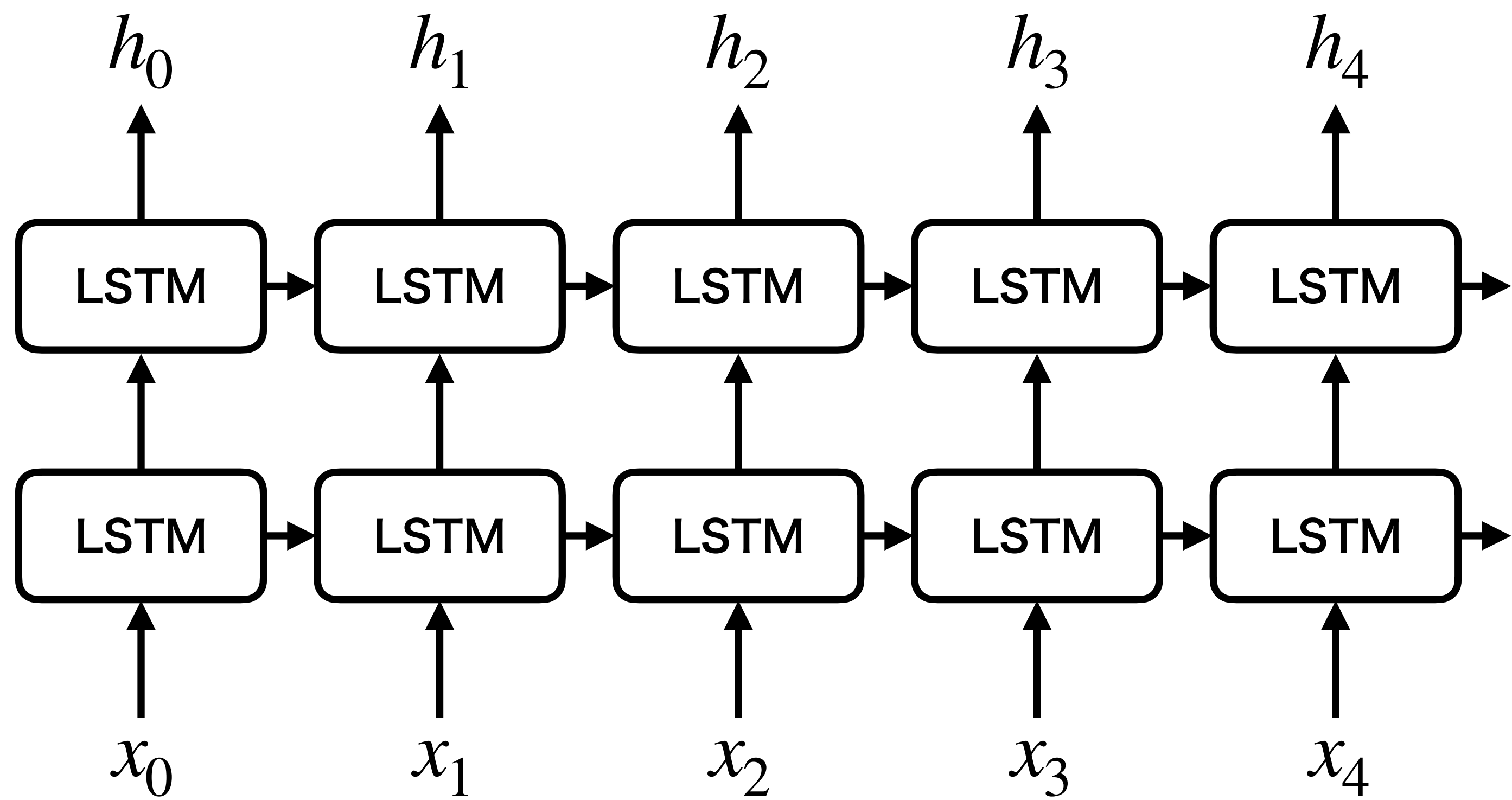


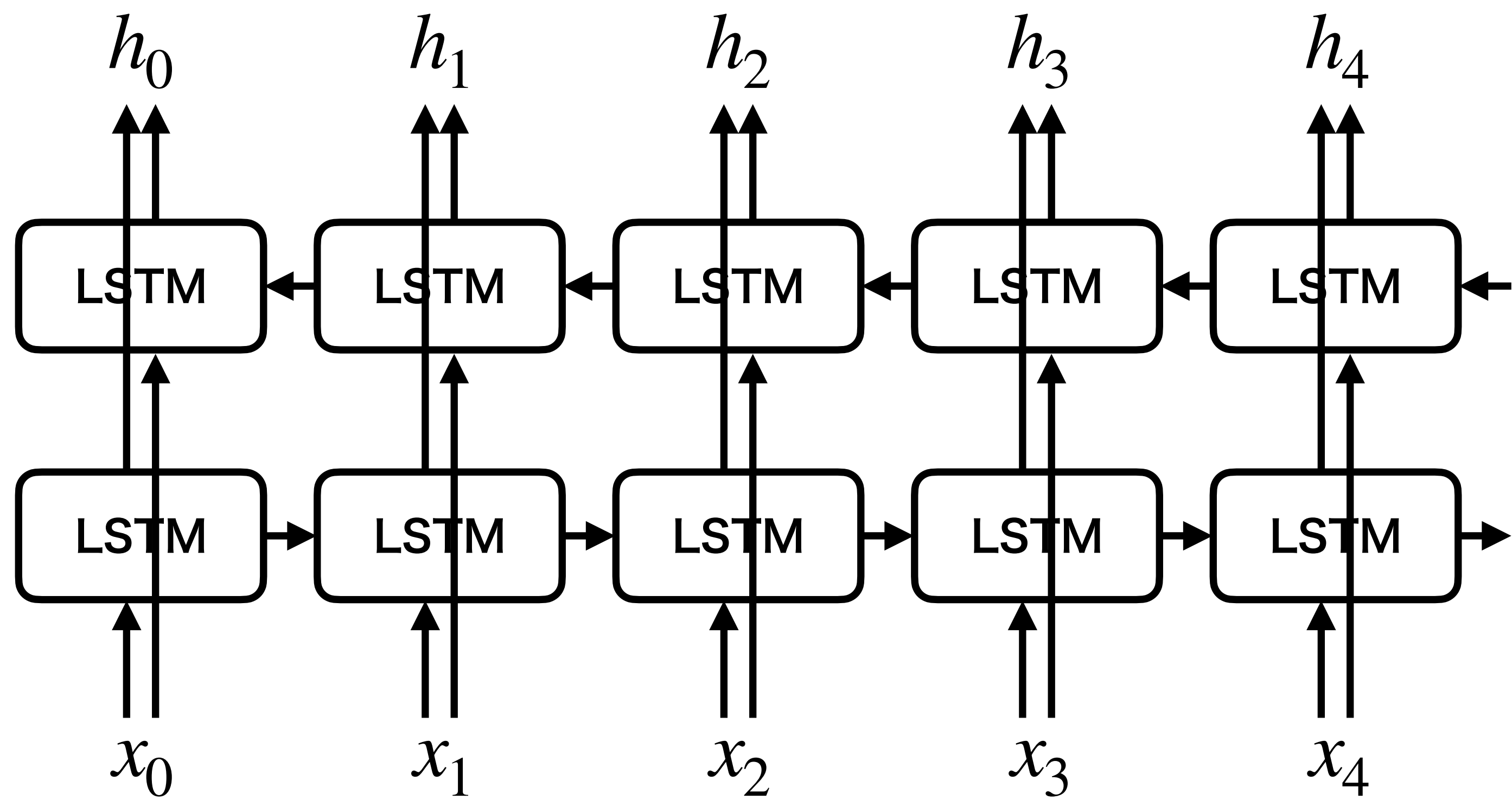


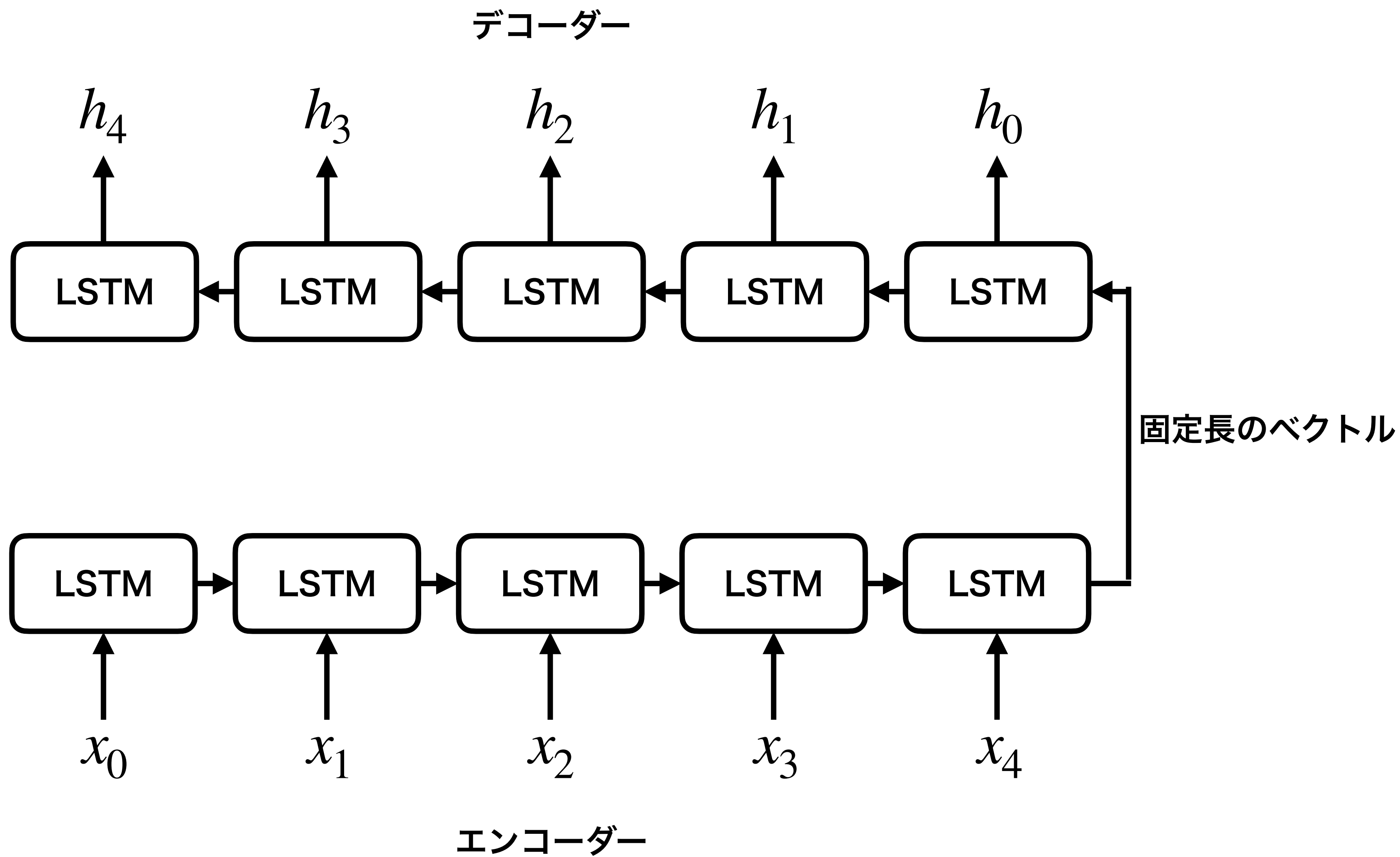


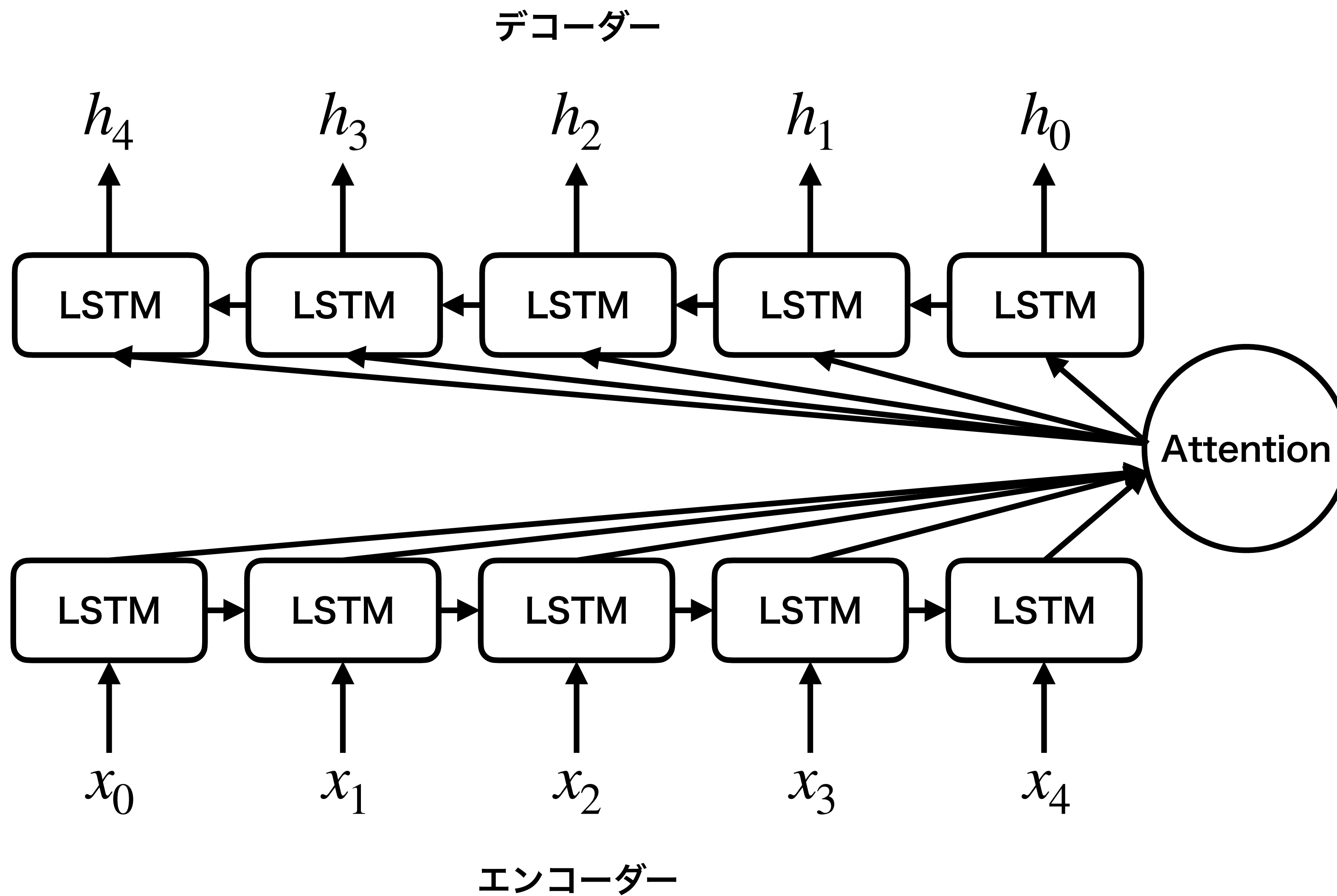


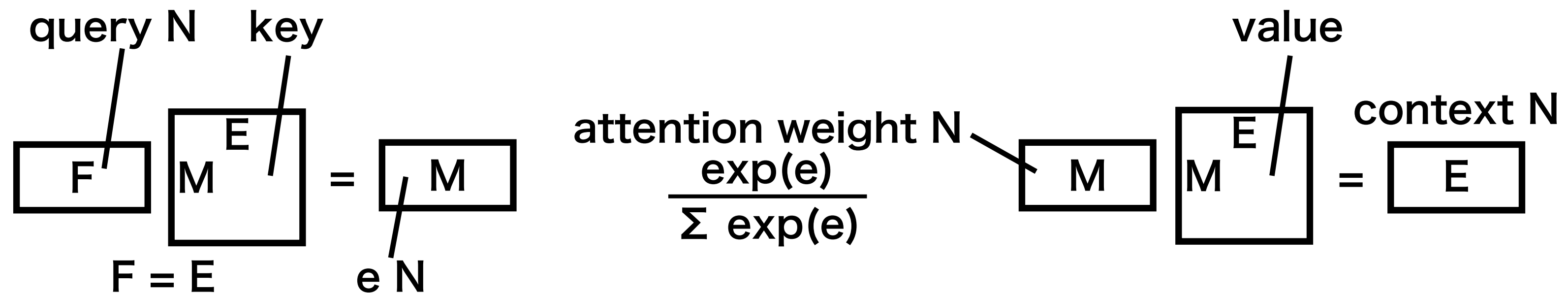
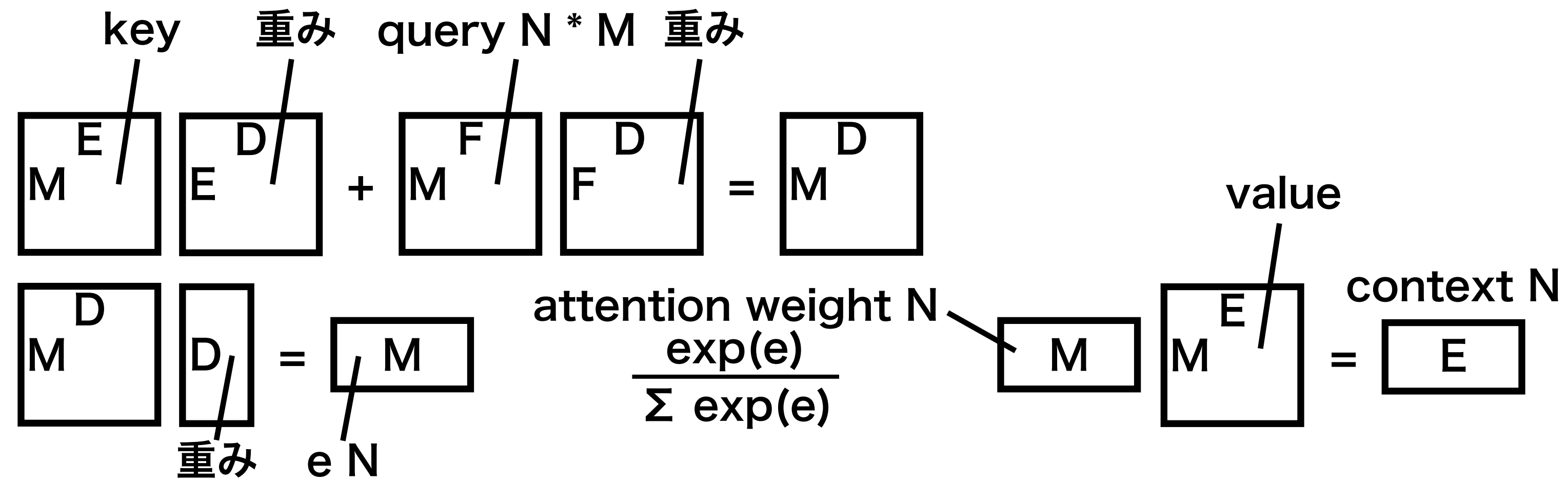


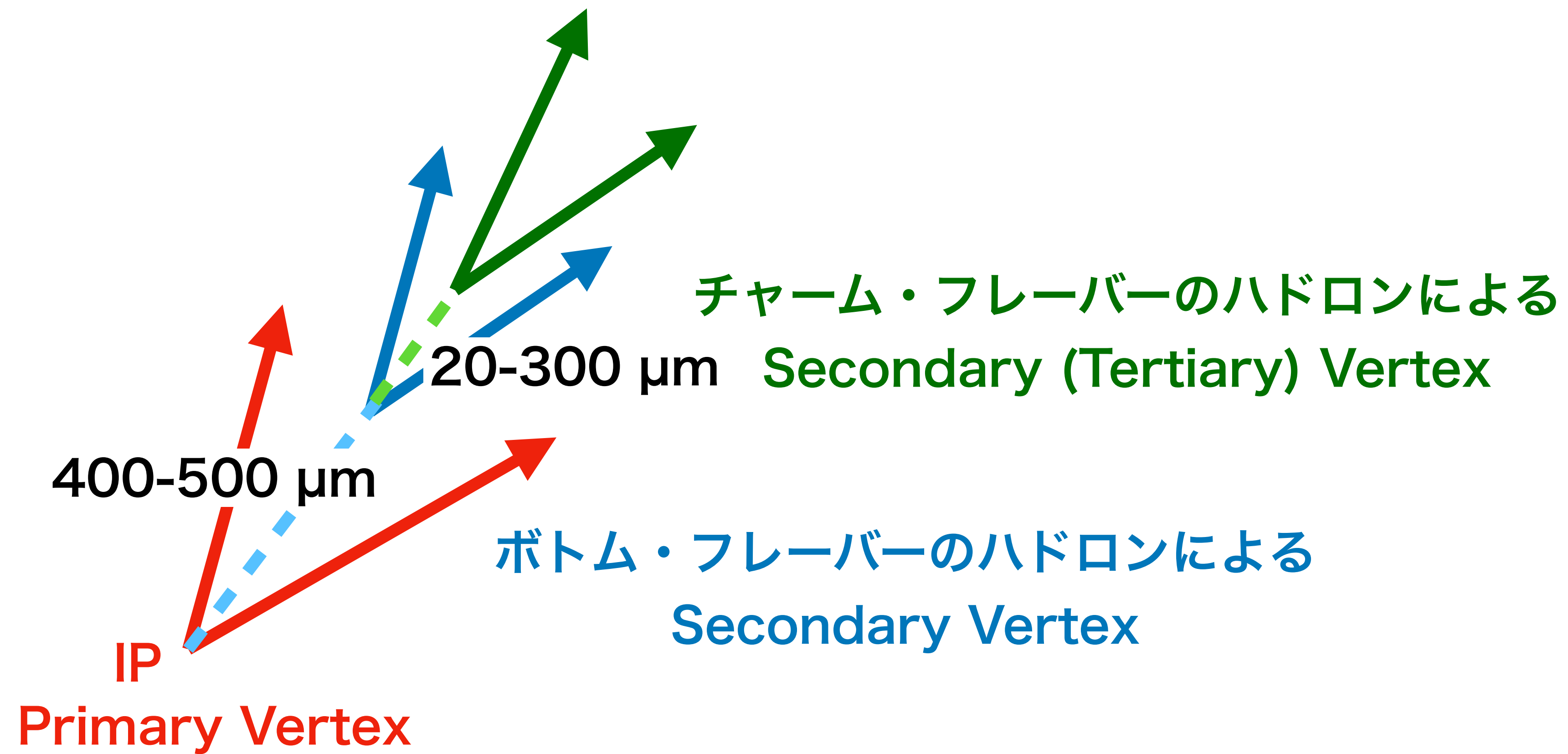


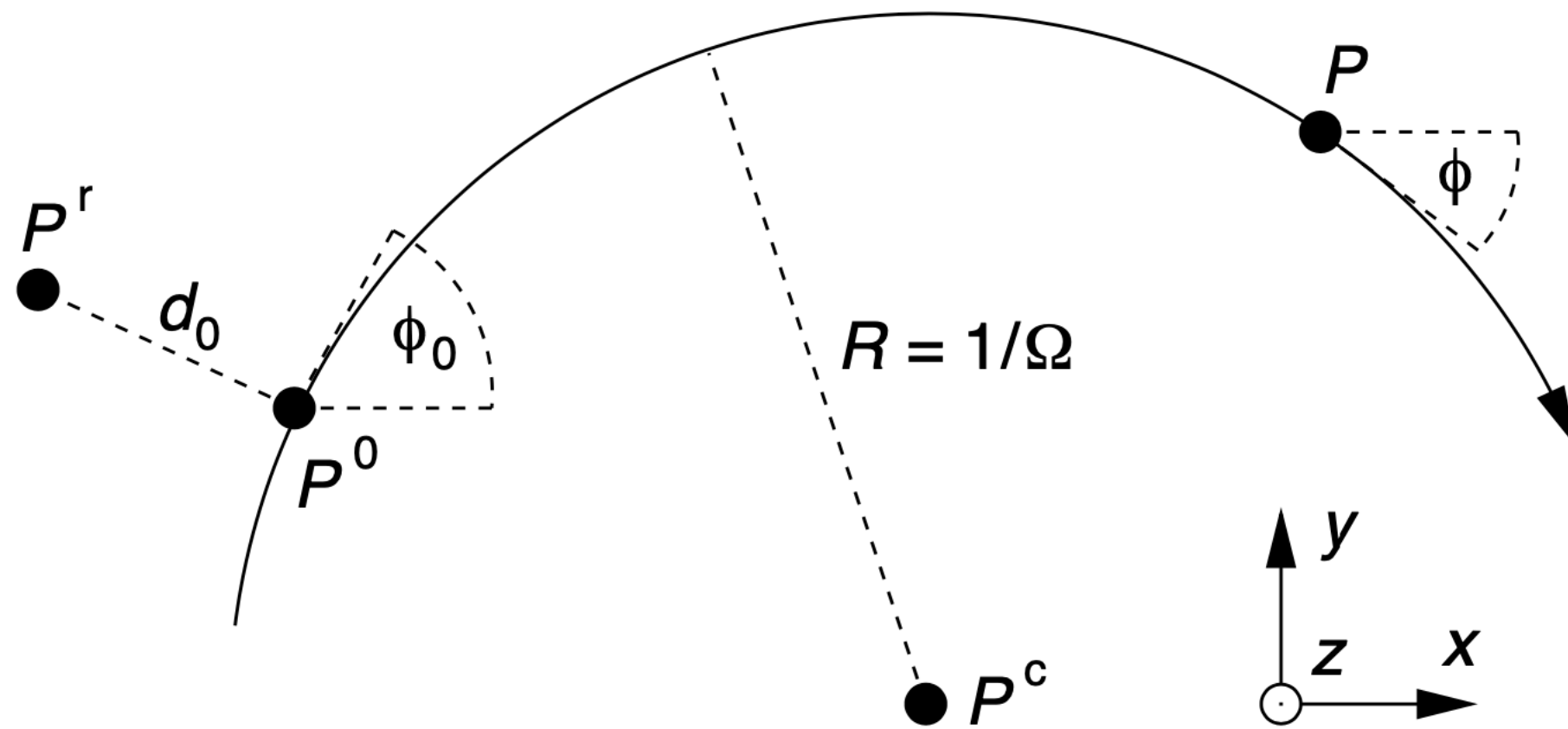




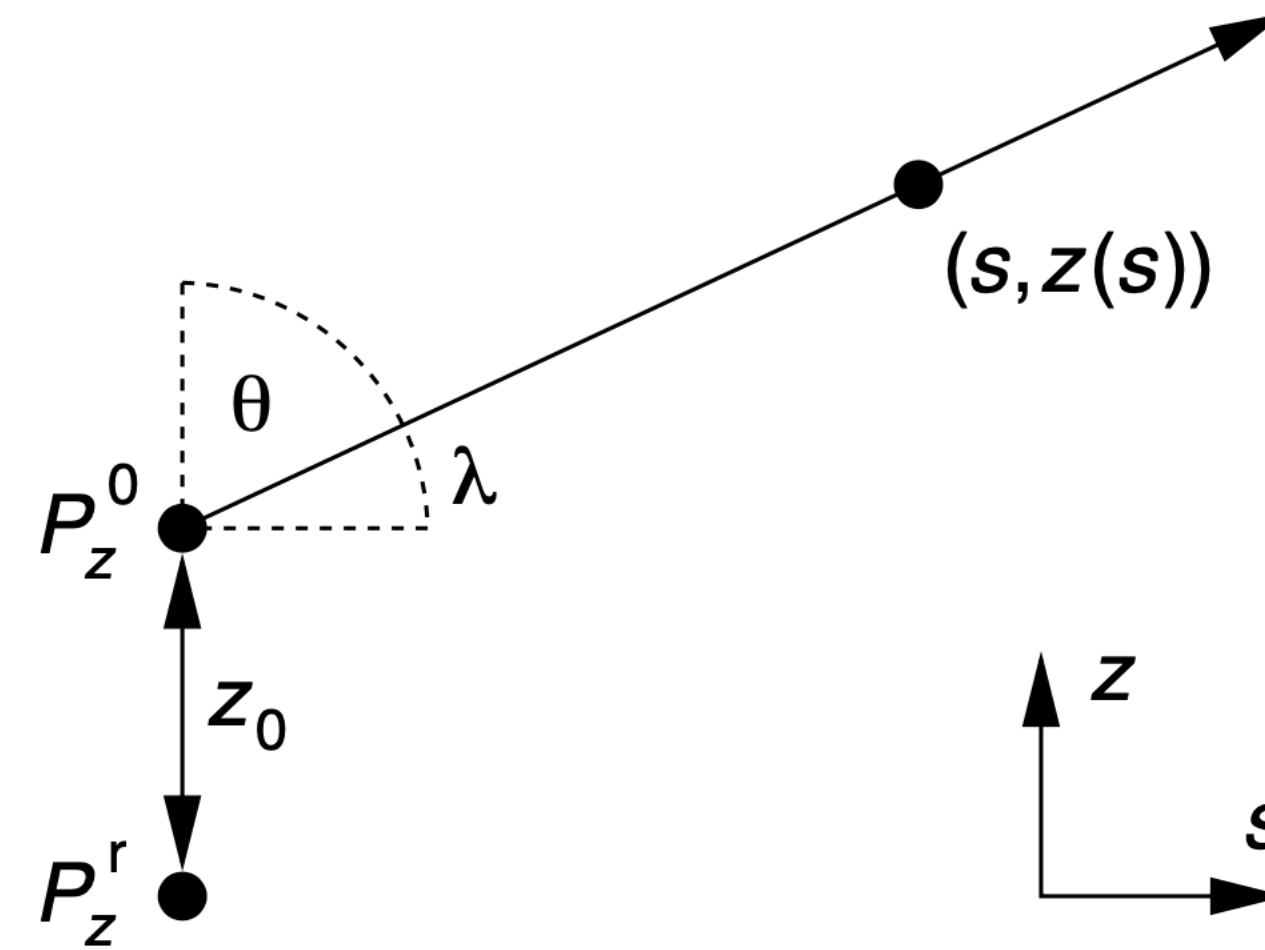






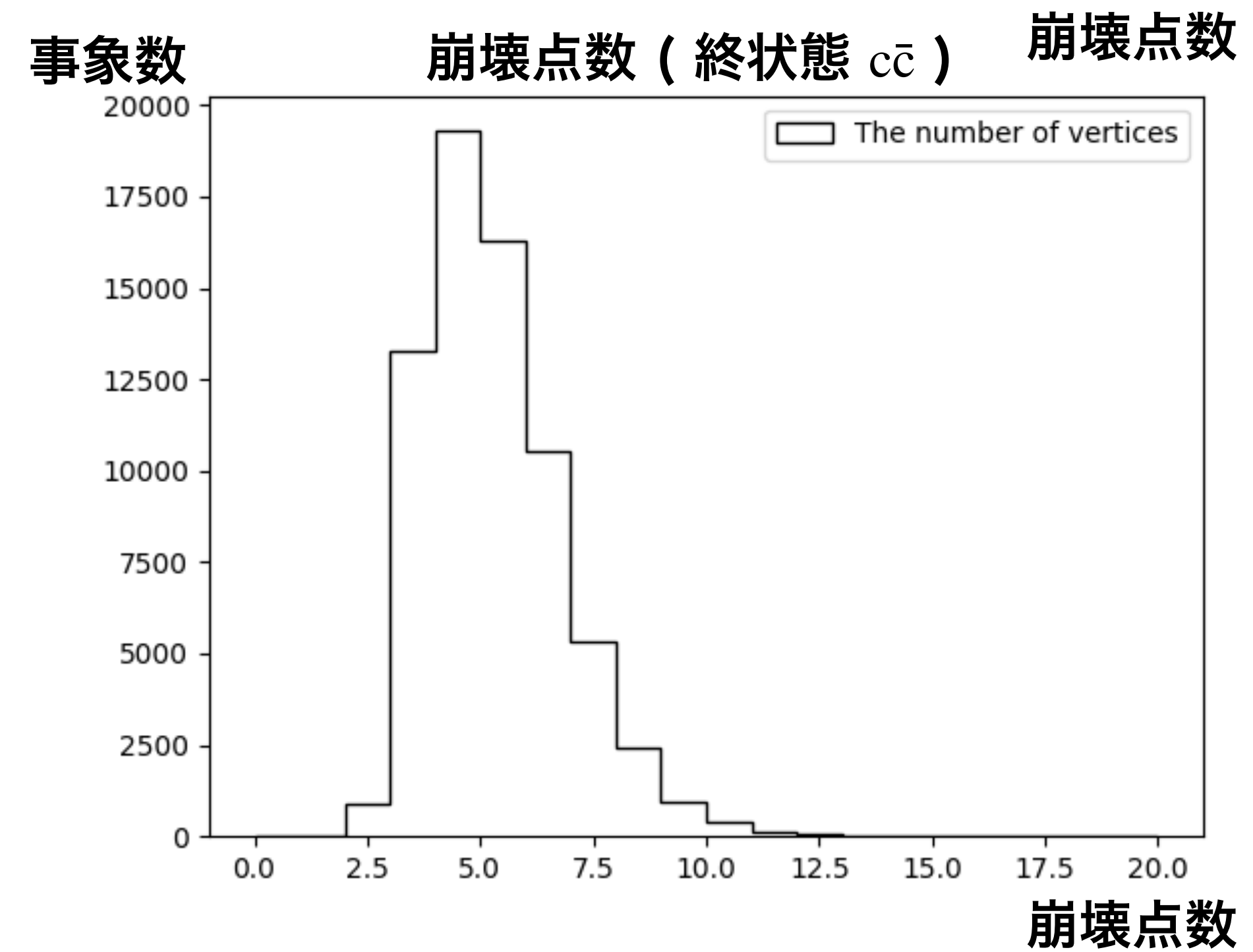
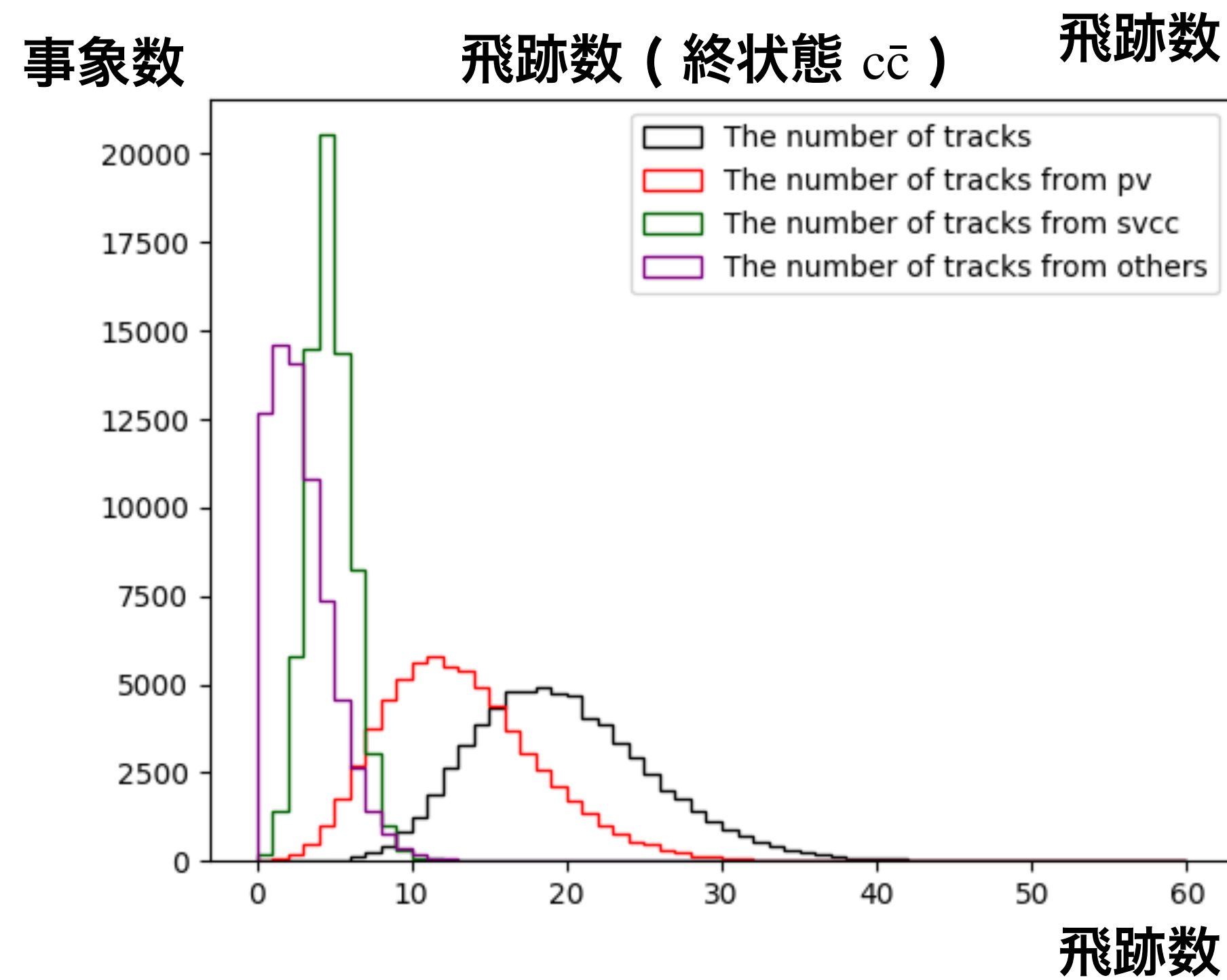
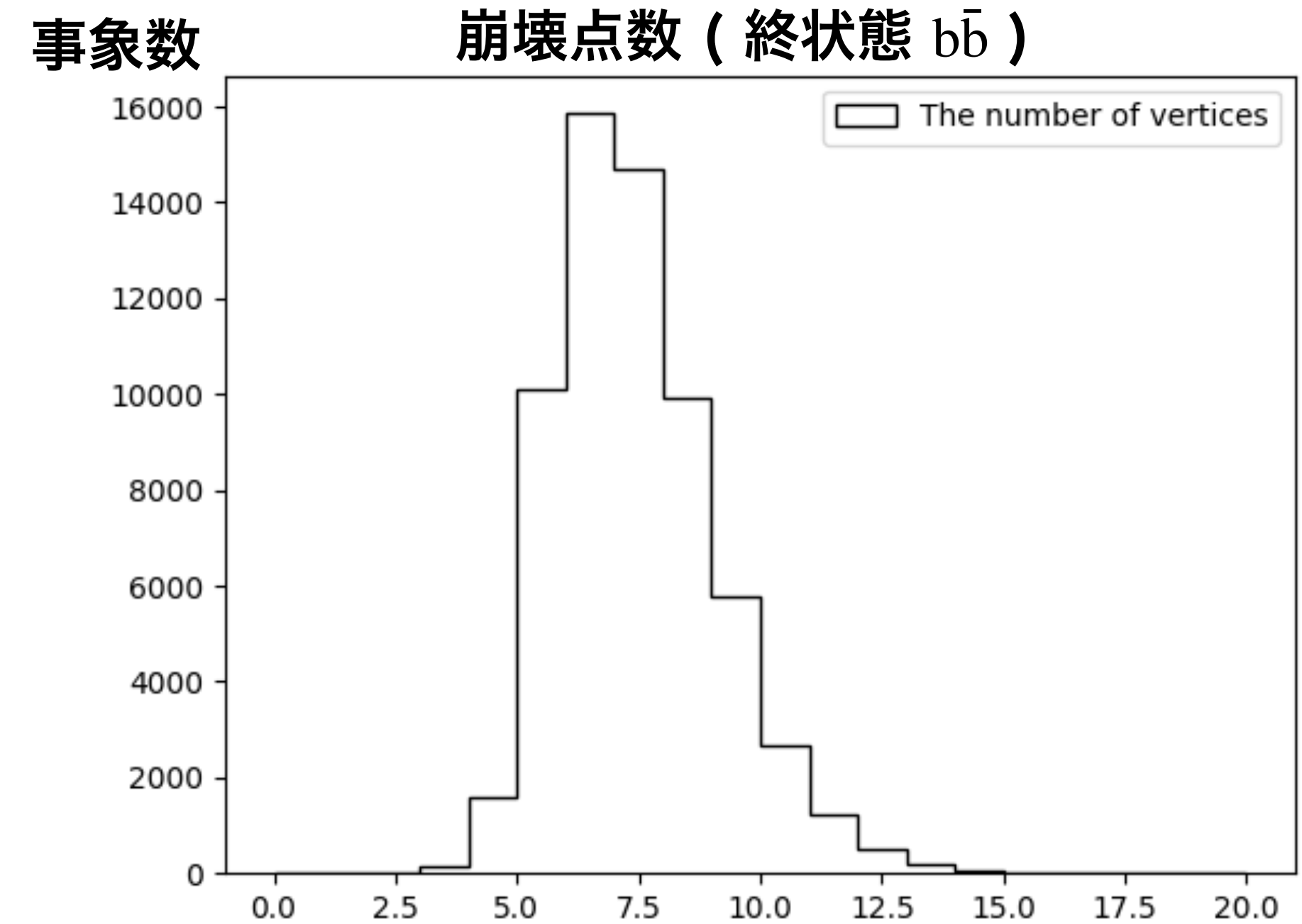
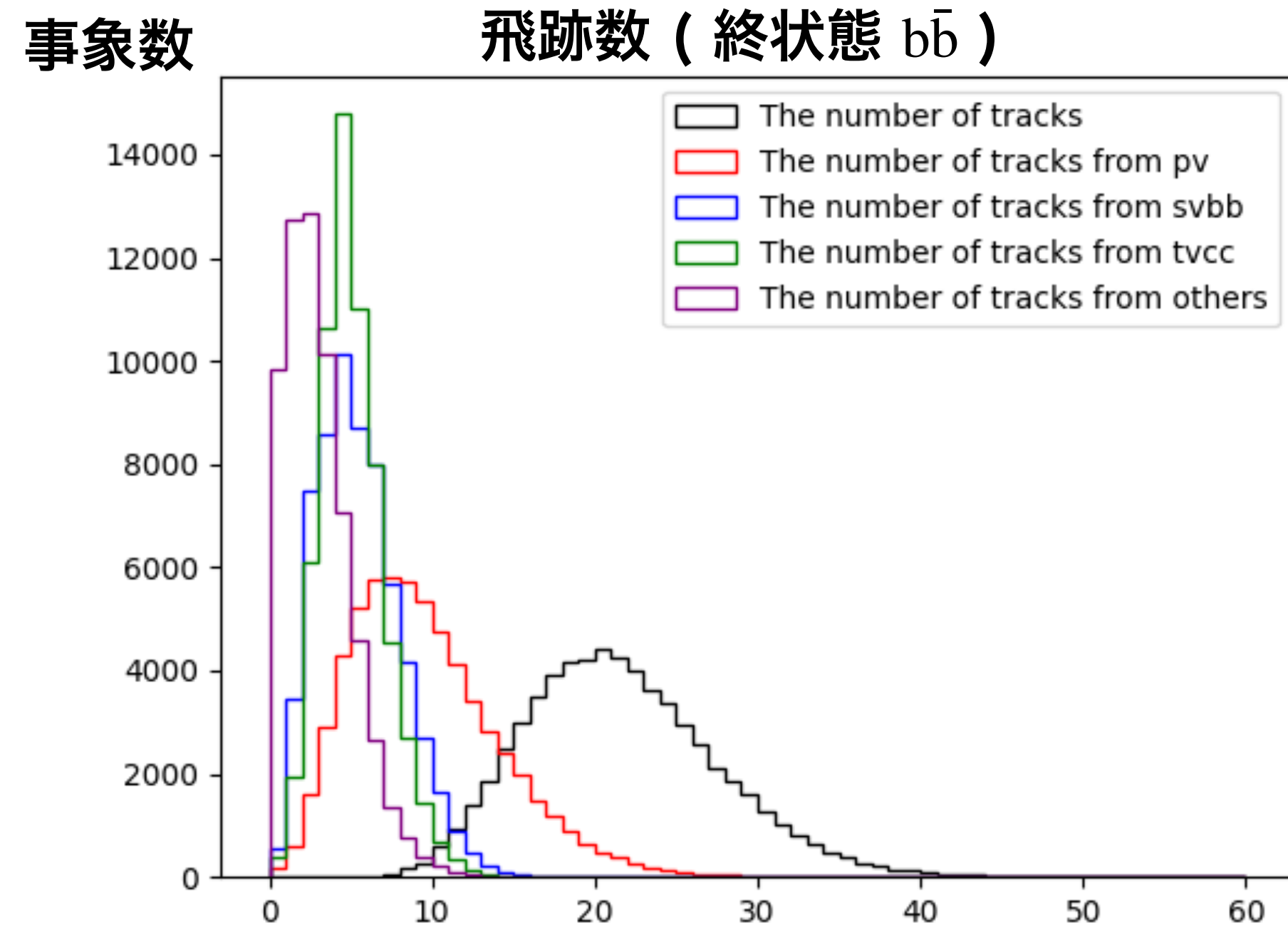


**Figure 1:** The projection of a helix segment in the  $xy$  plane is a part of an arc with centre  $P^c$  and radius  $R$ . The direction of the particle is shown with the arrow at the arc. All track parameters are given relative to the reference point  $P^r$ .

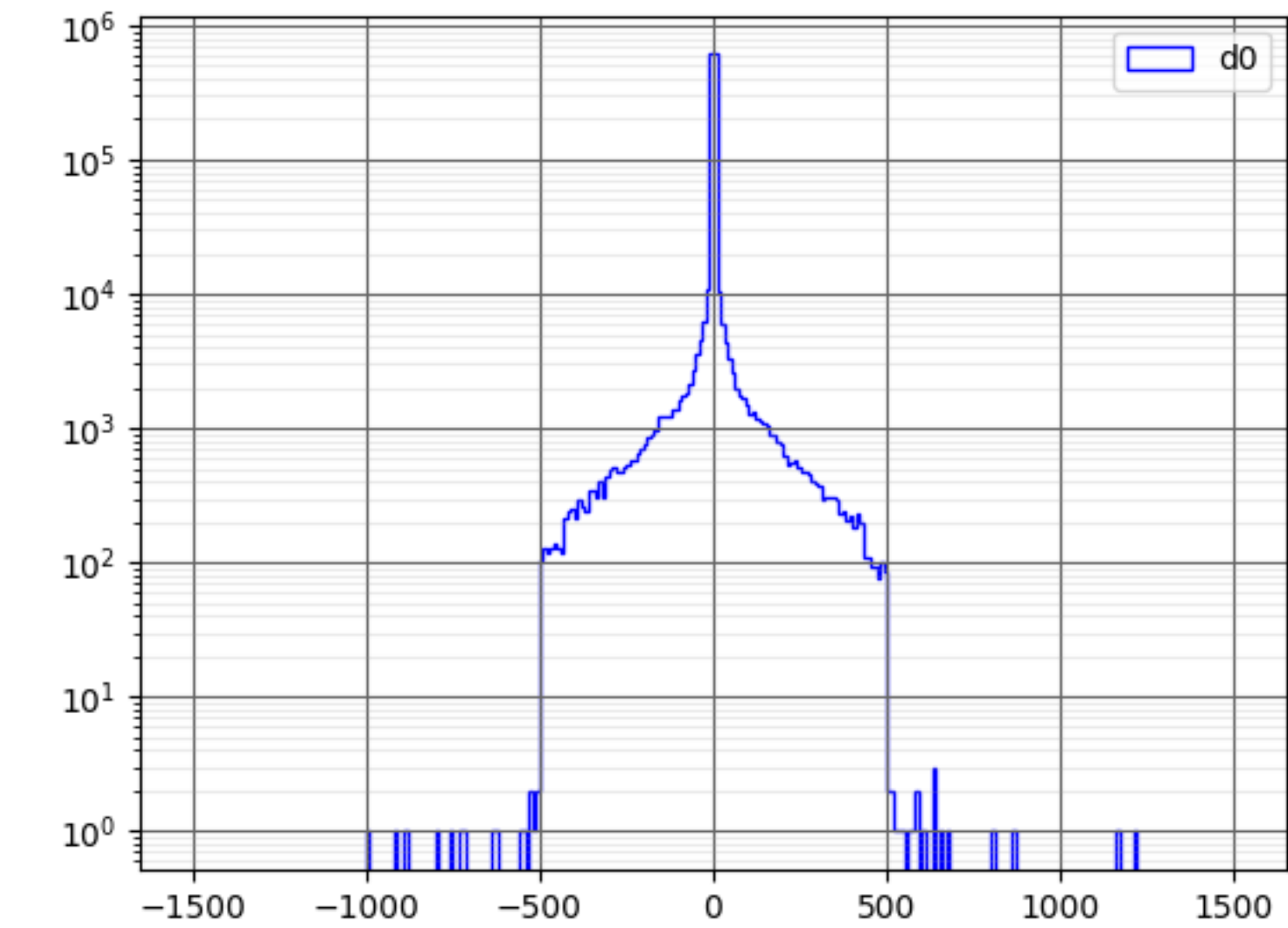


**Figure 2:** The projection of a helix in the  $sz$  plane is a straight line (see Eq. 10). The variable  $s$  at a point  $P$  is the arc length in the  $xy$  plane from  $P^0$  to  $P$ . This also implies that  $s = 0$ , if  $z = z_0$ .

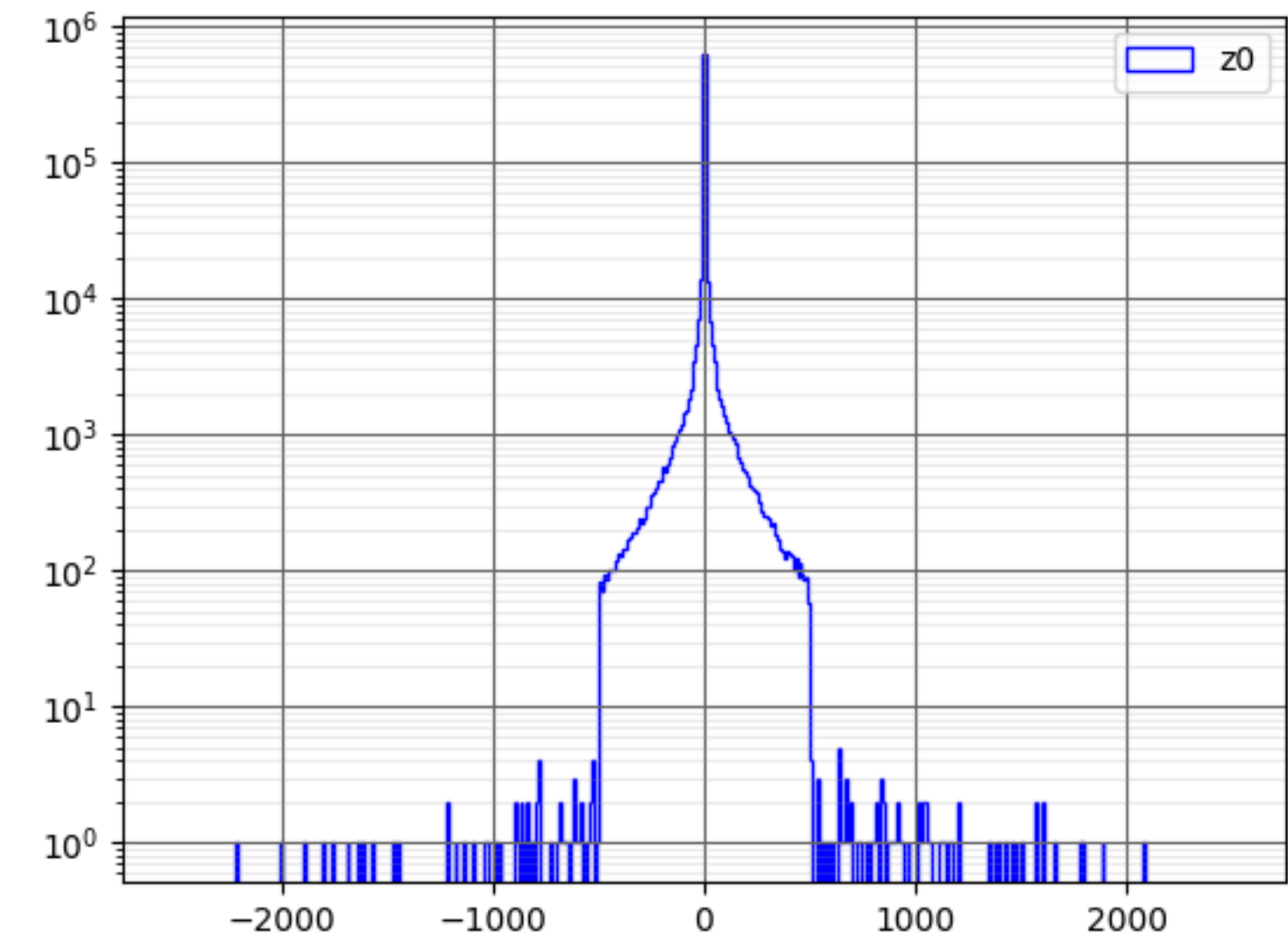




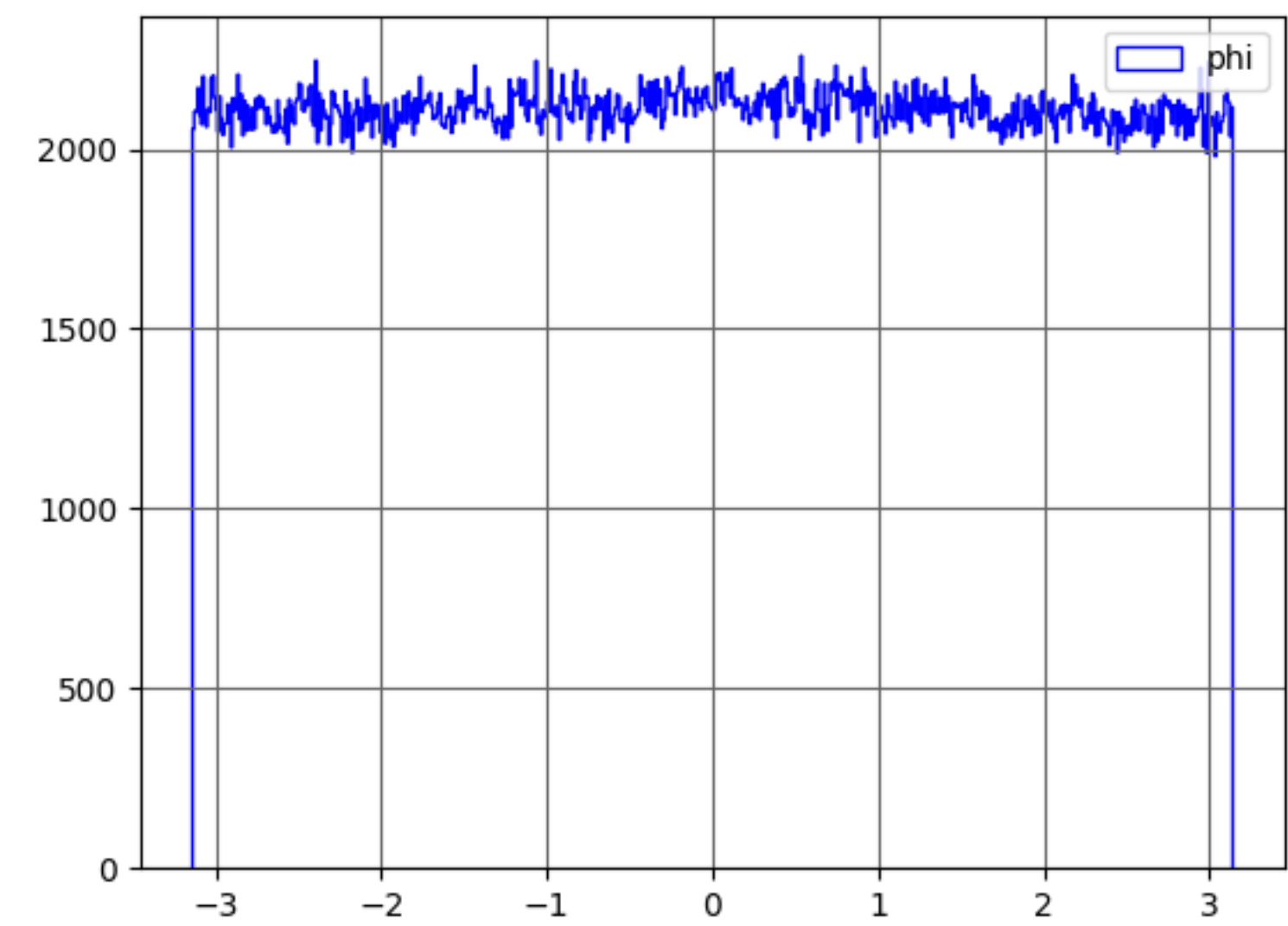
終状態  $b\bar{b}$



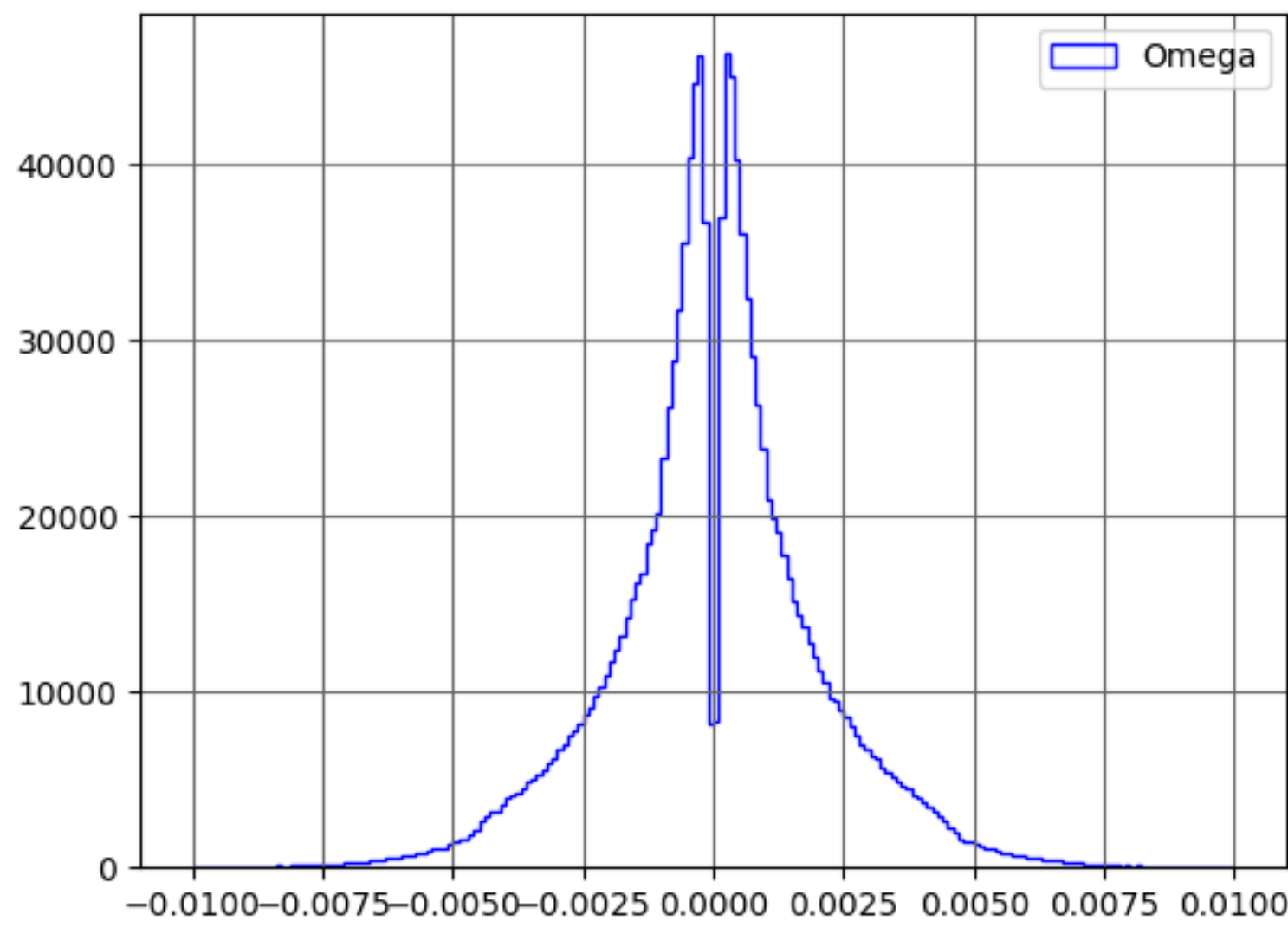
$d_0$



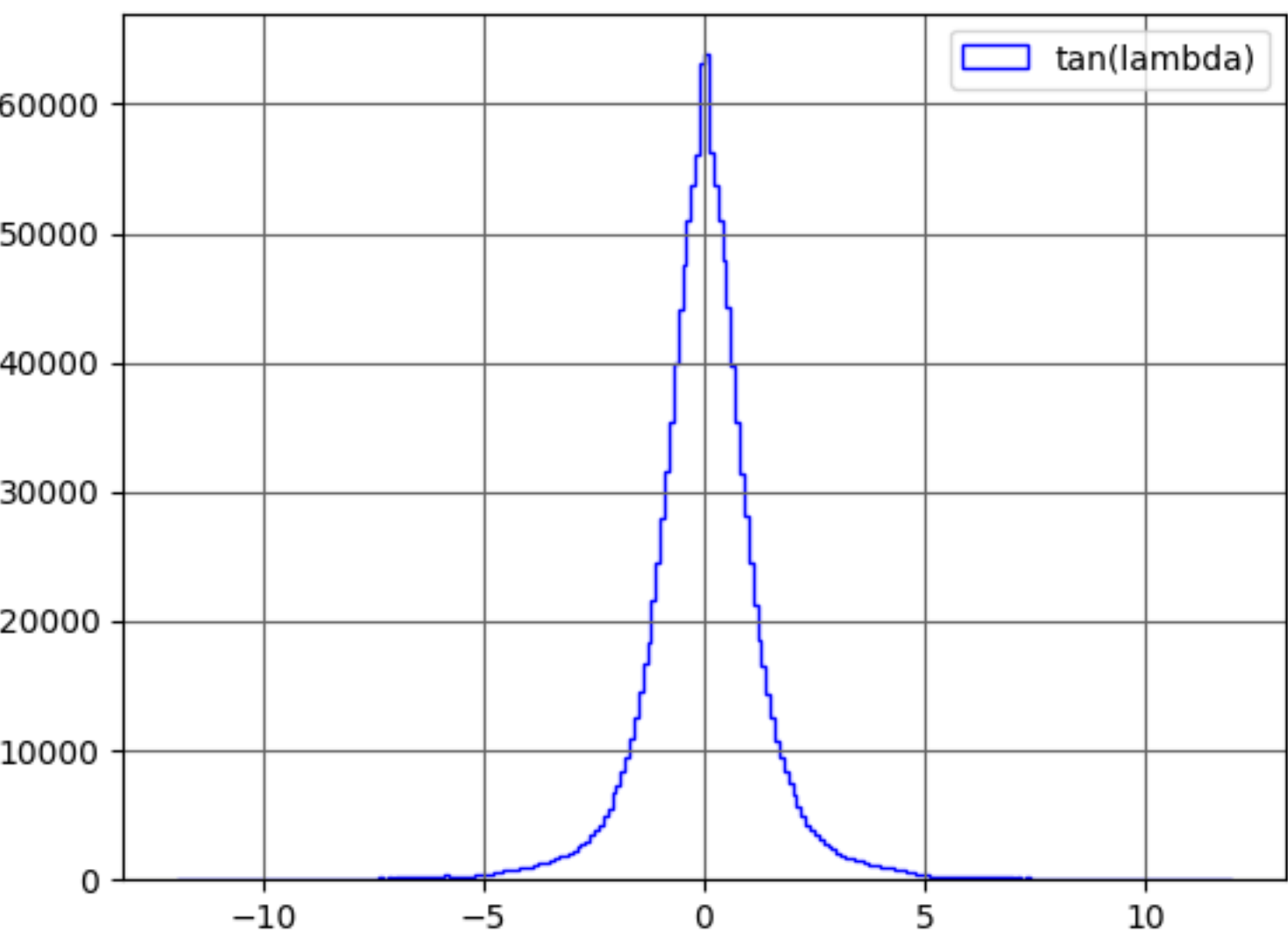
$z_0$



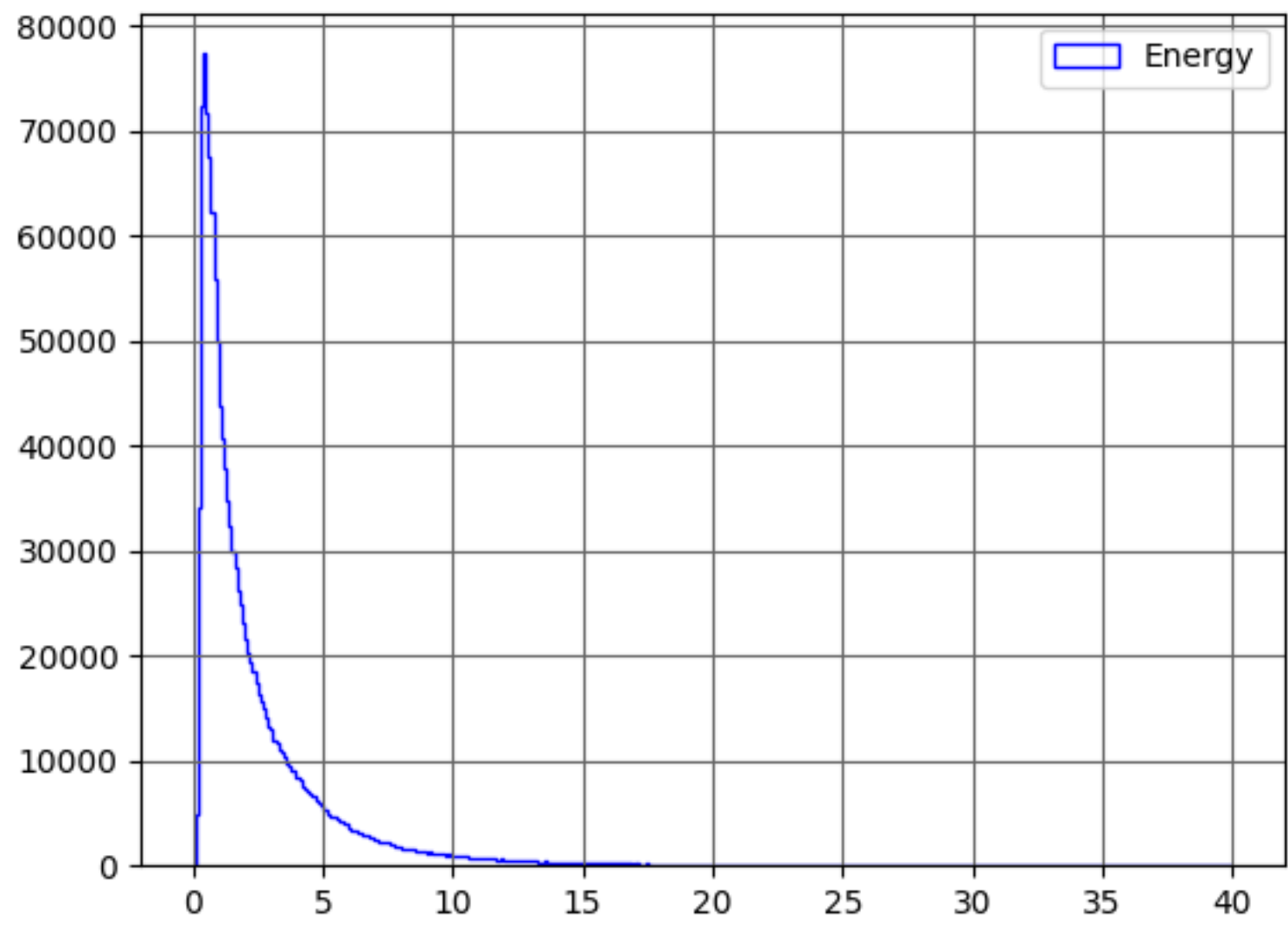
$\phi$



$\Omega$

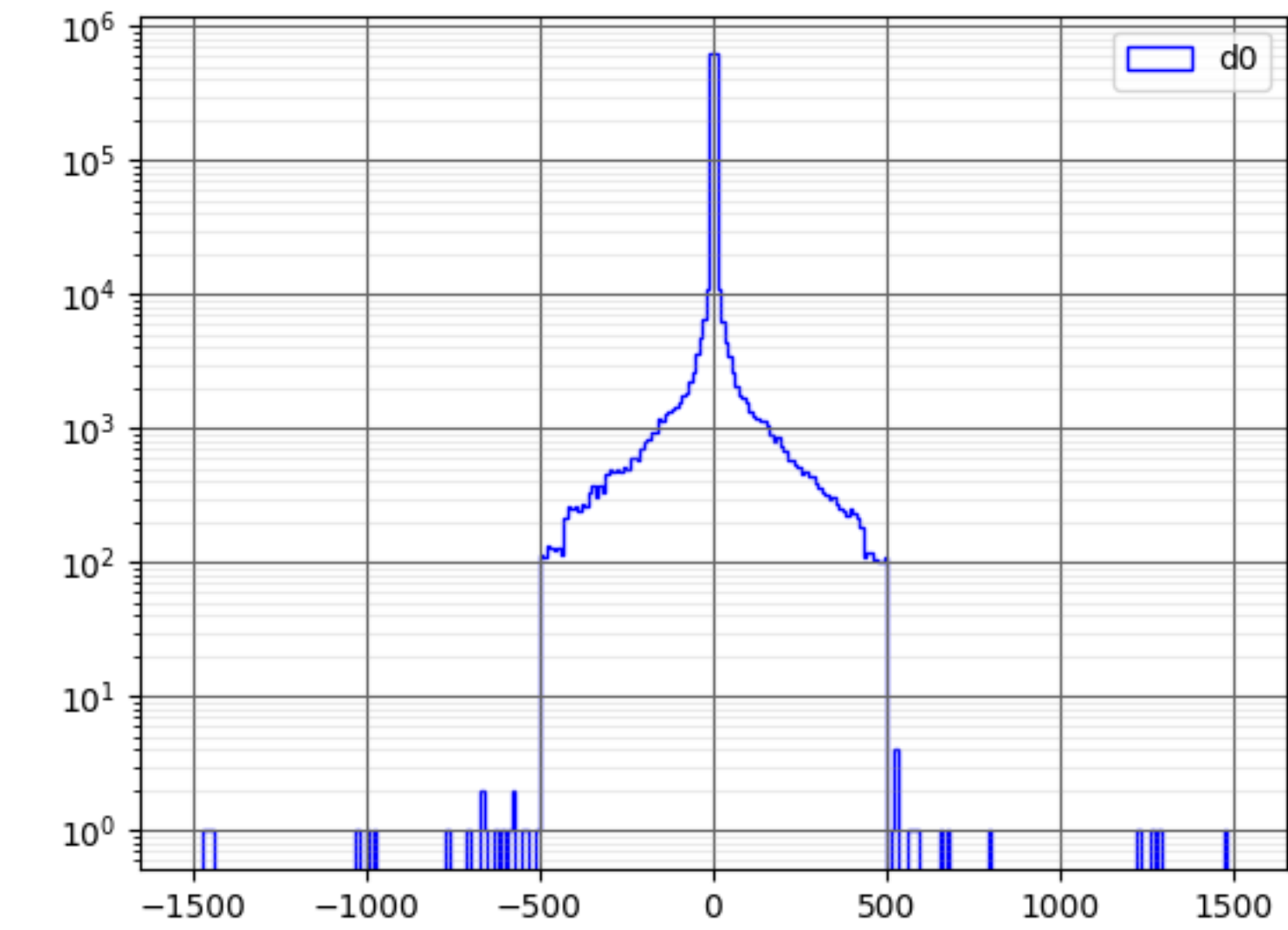


$\tan(\lambda)$

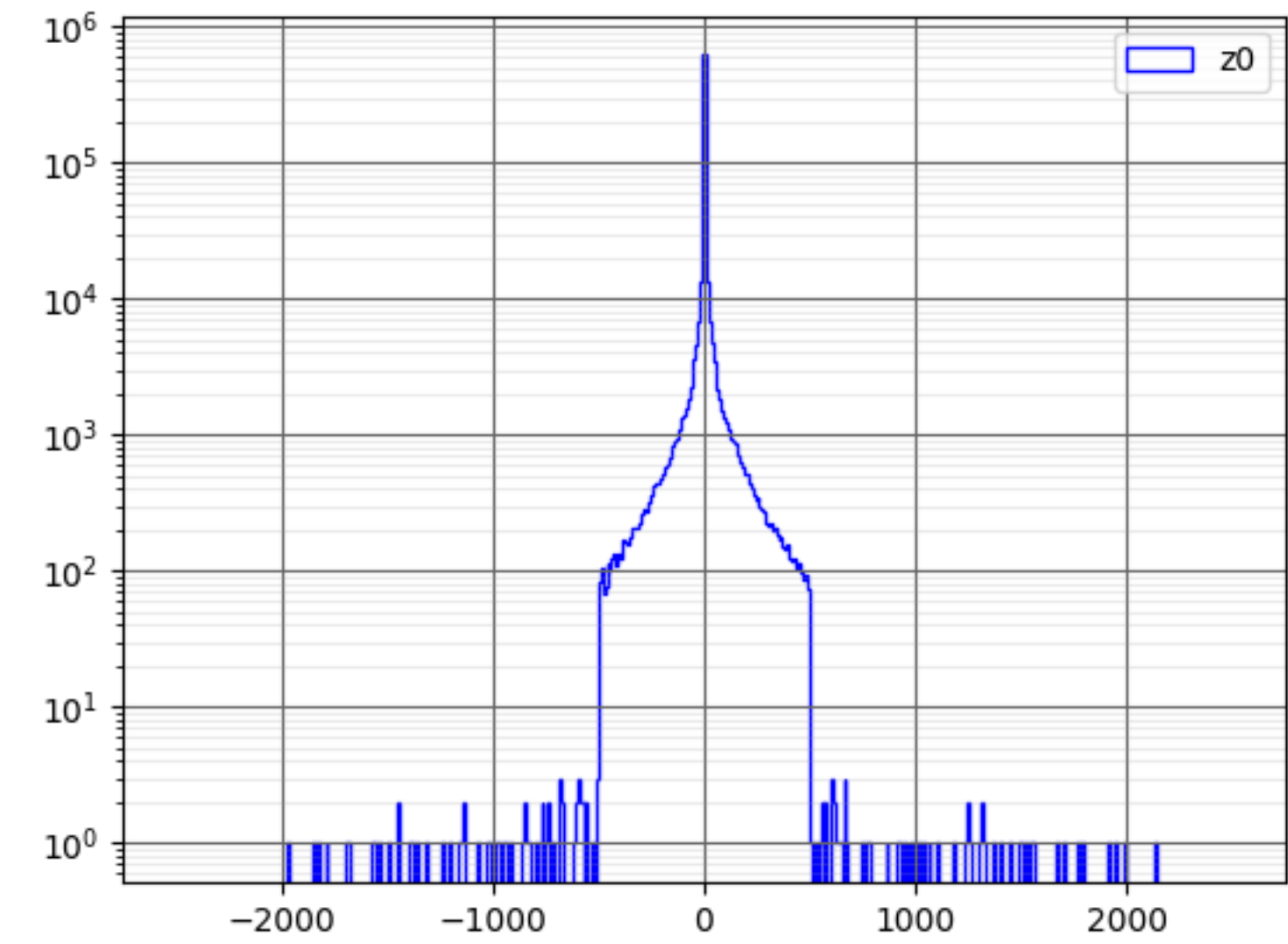


Energy

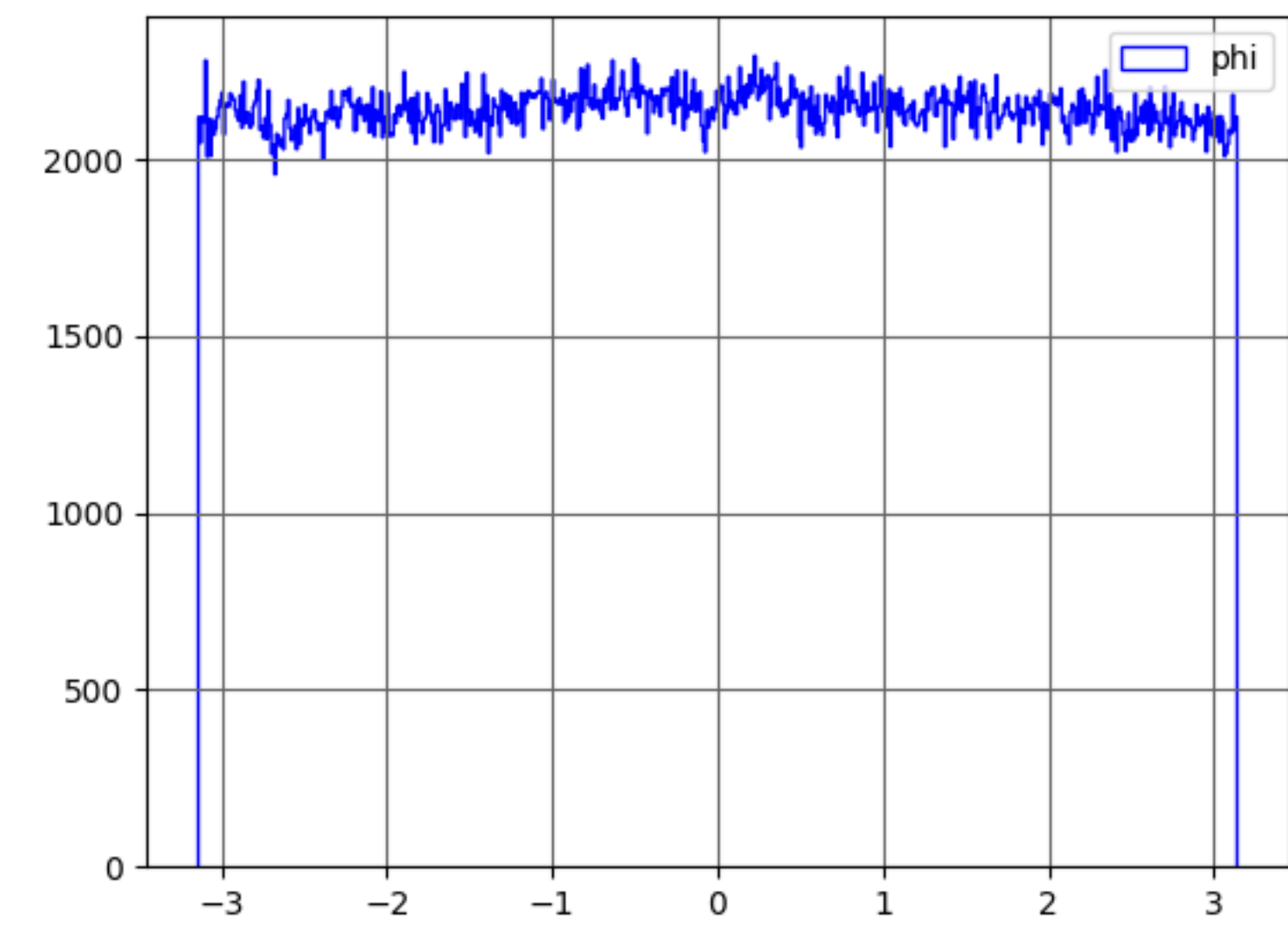
終状態  $c\bar{c}$



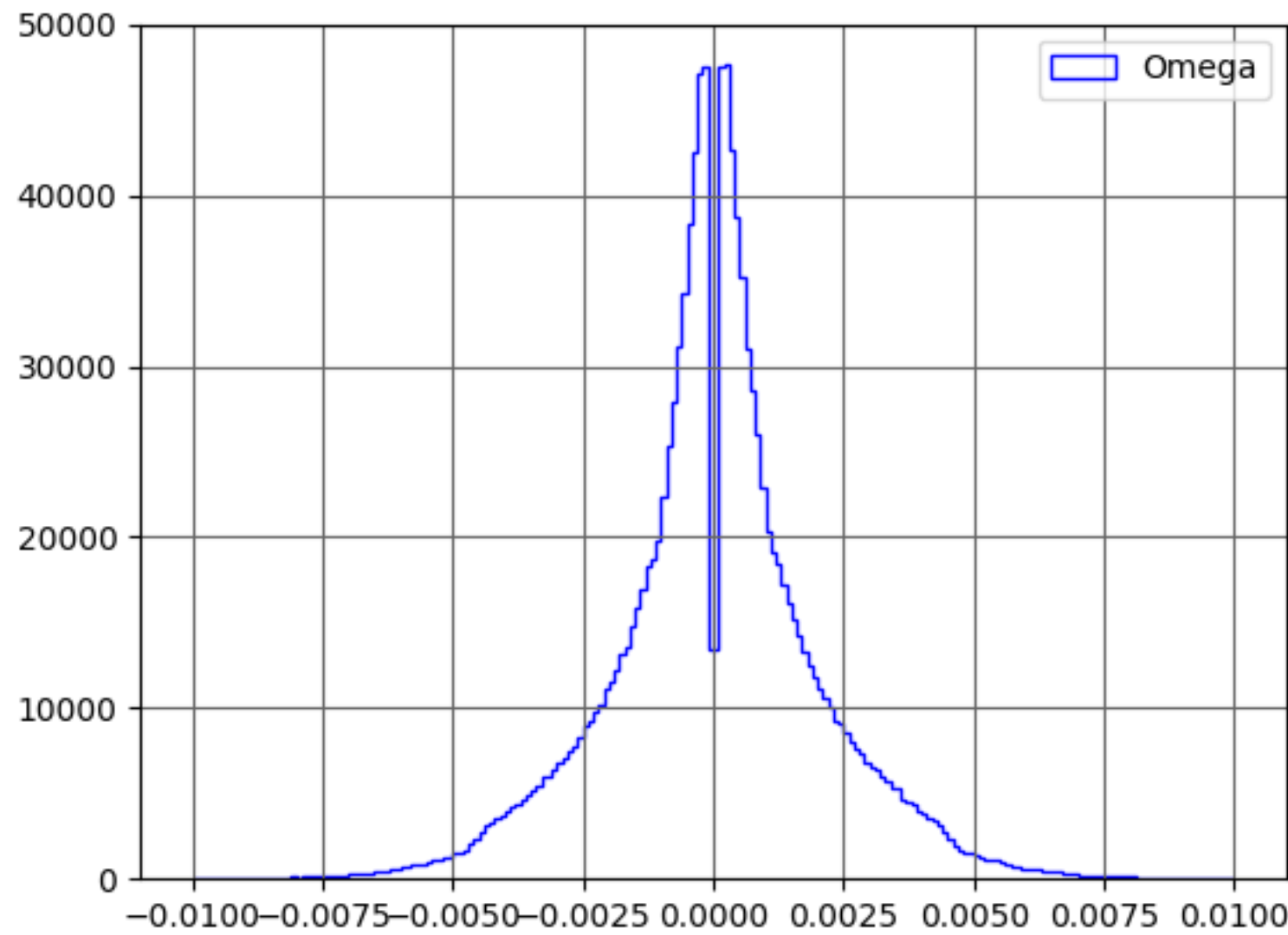
$d_0$



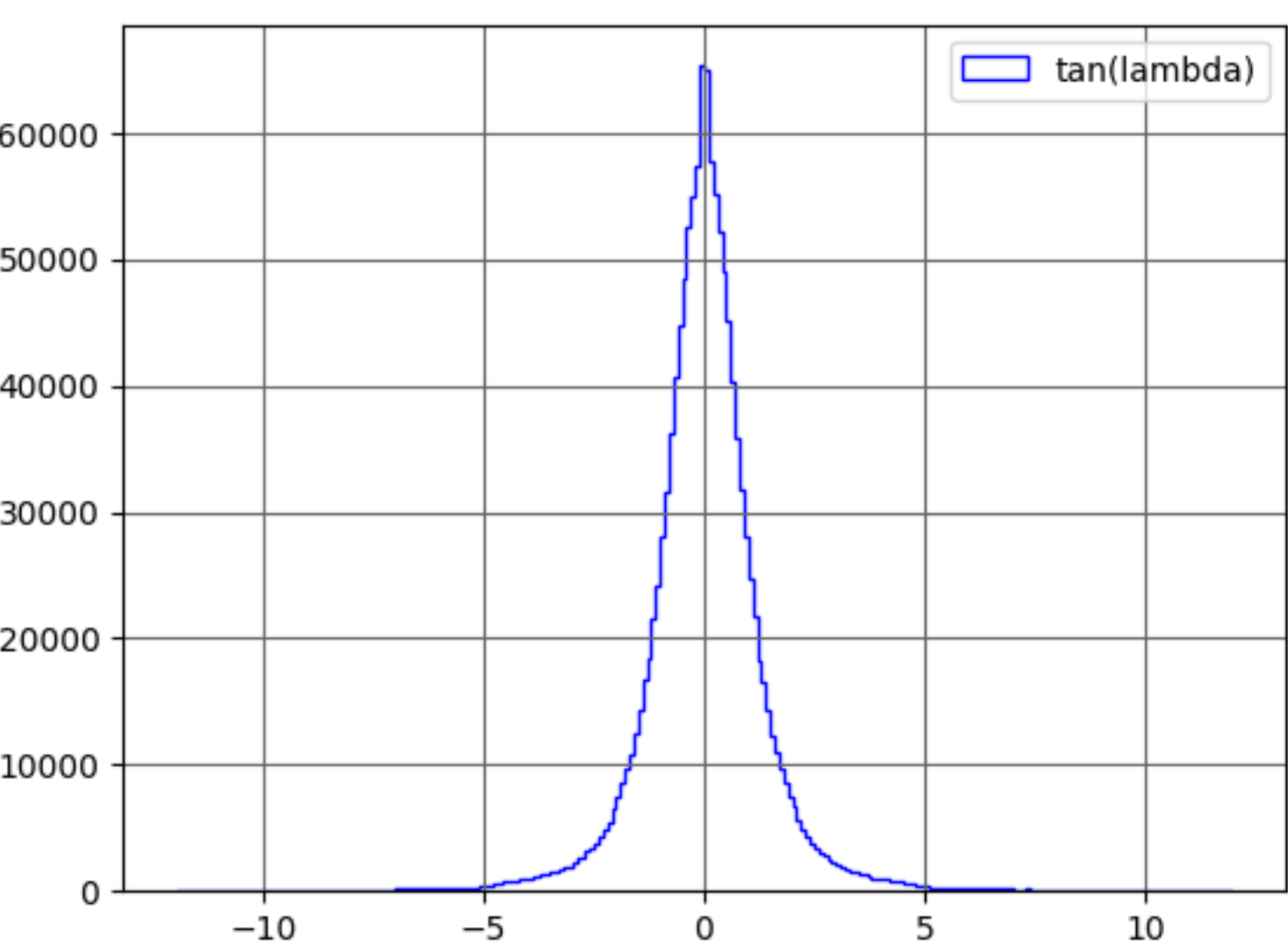
$z_0$



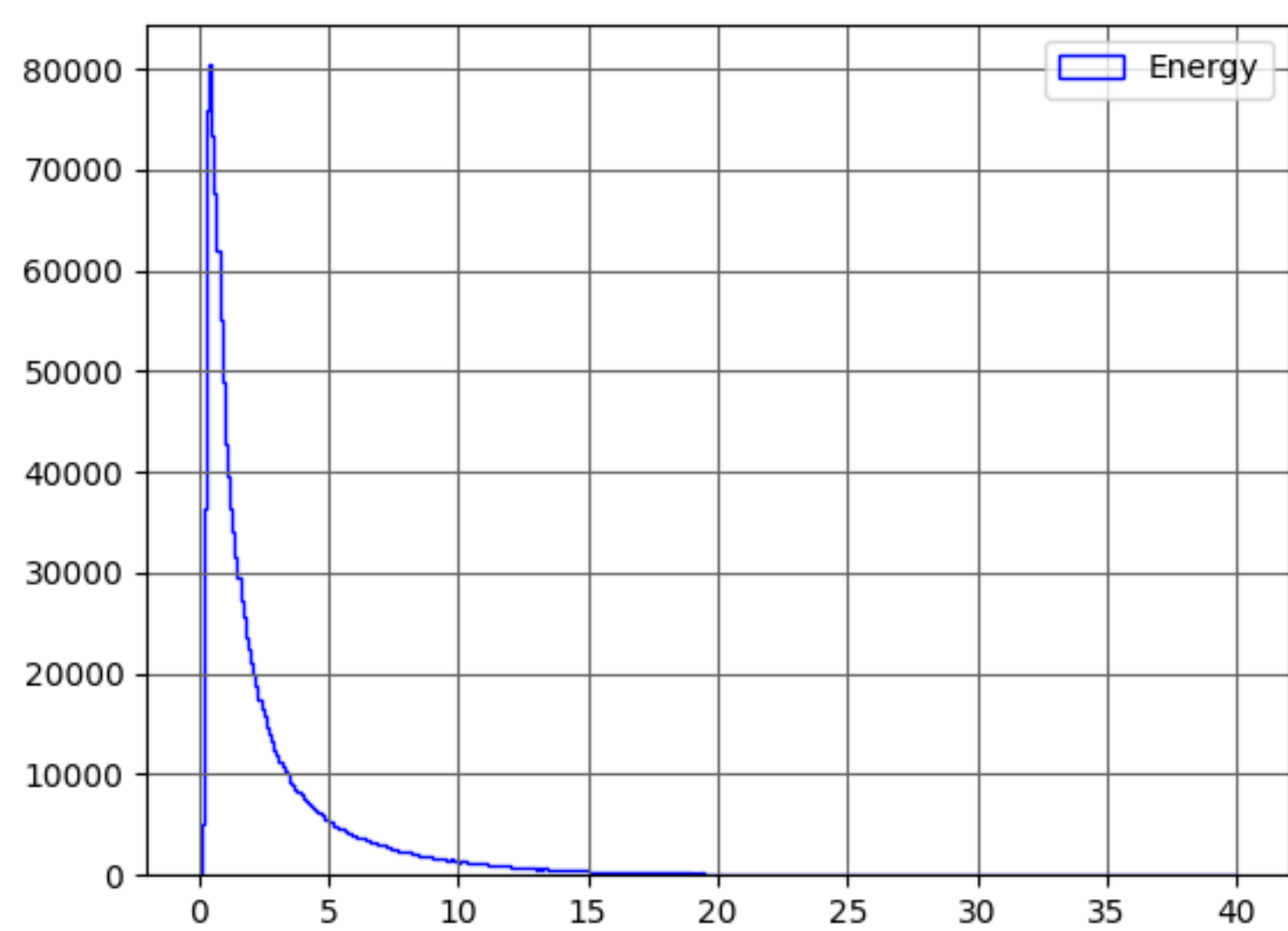
$\phi$



$\Omega$

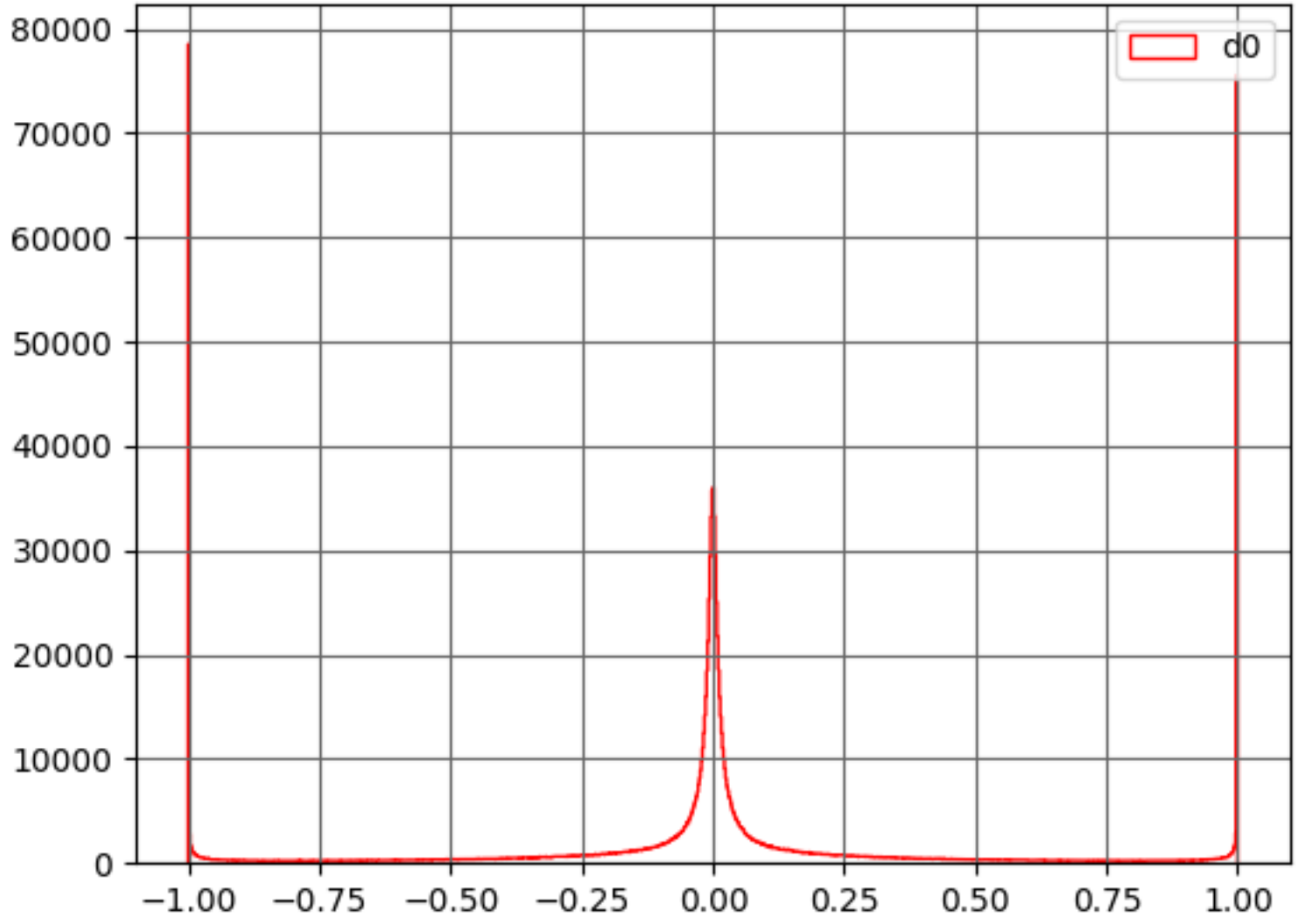


$\tan(\lambda)$

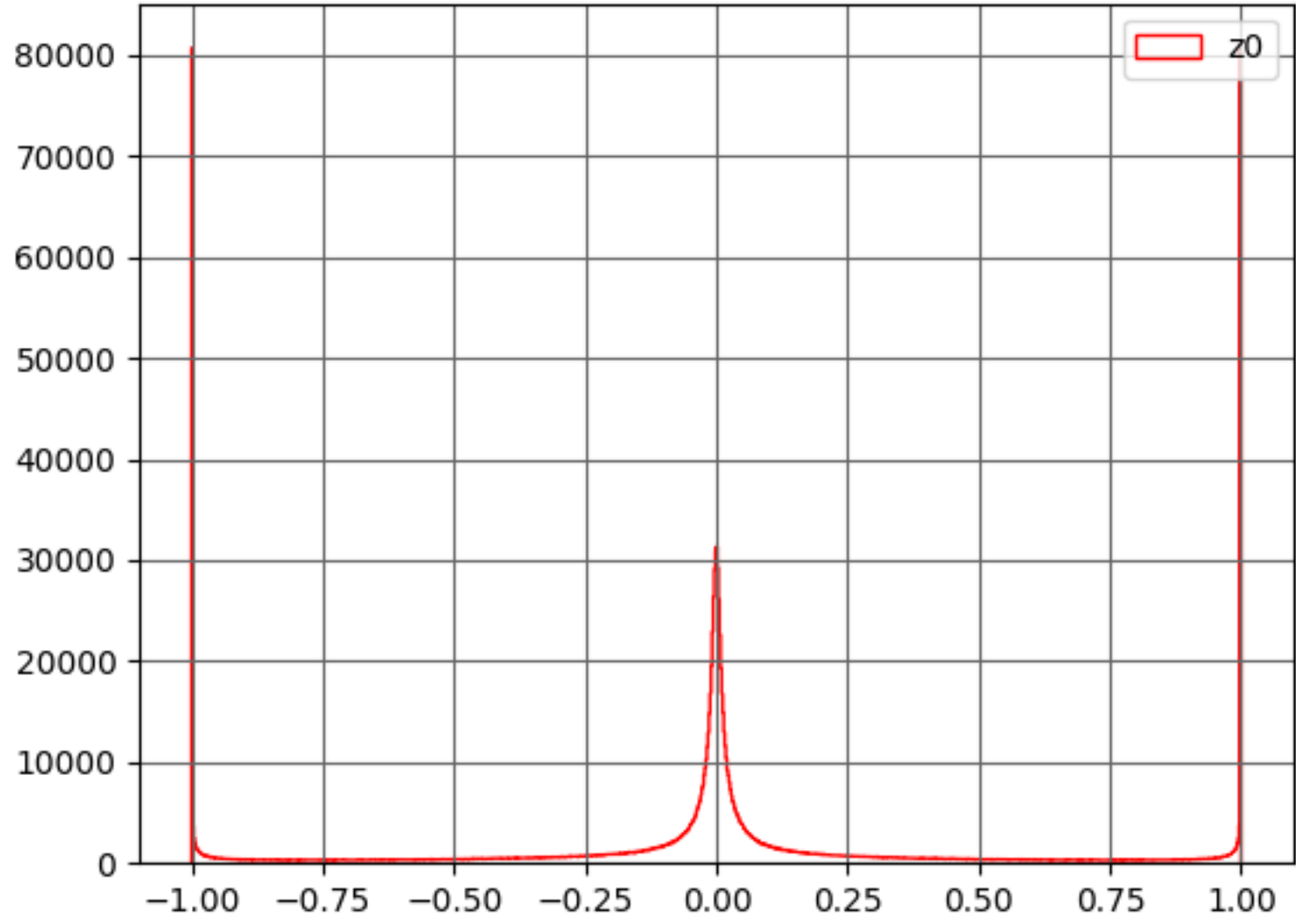


Energy

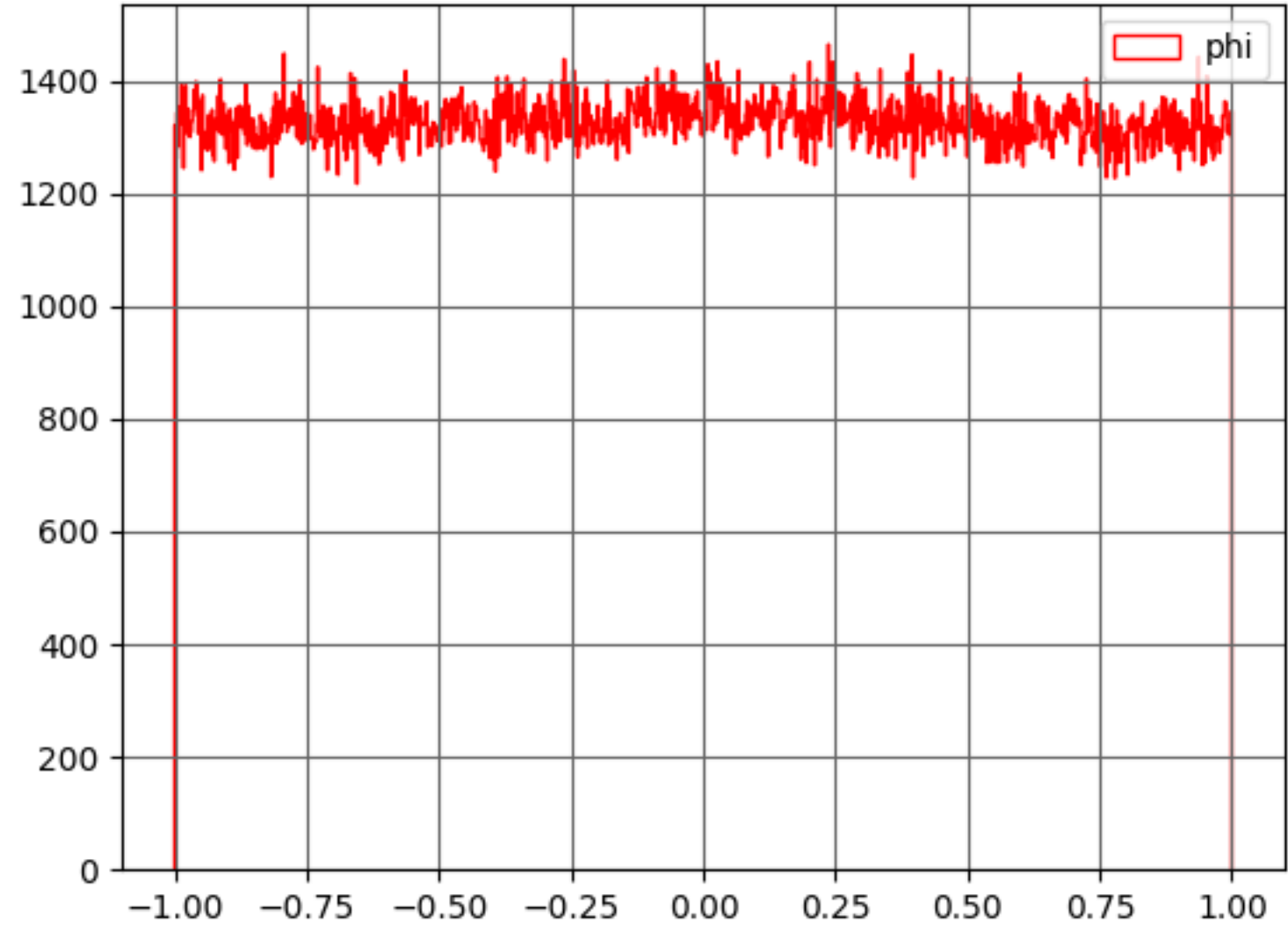
終状態  $b\bar{b}$



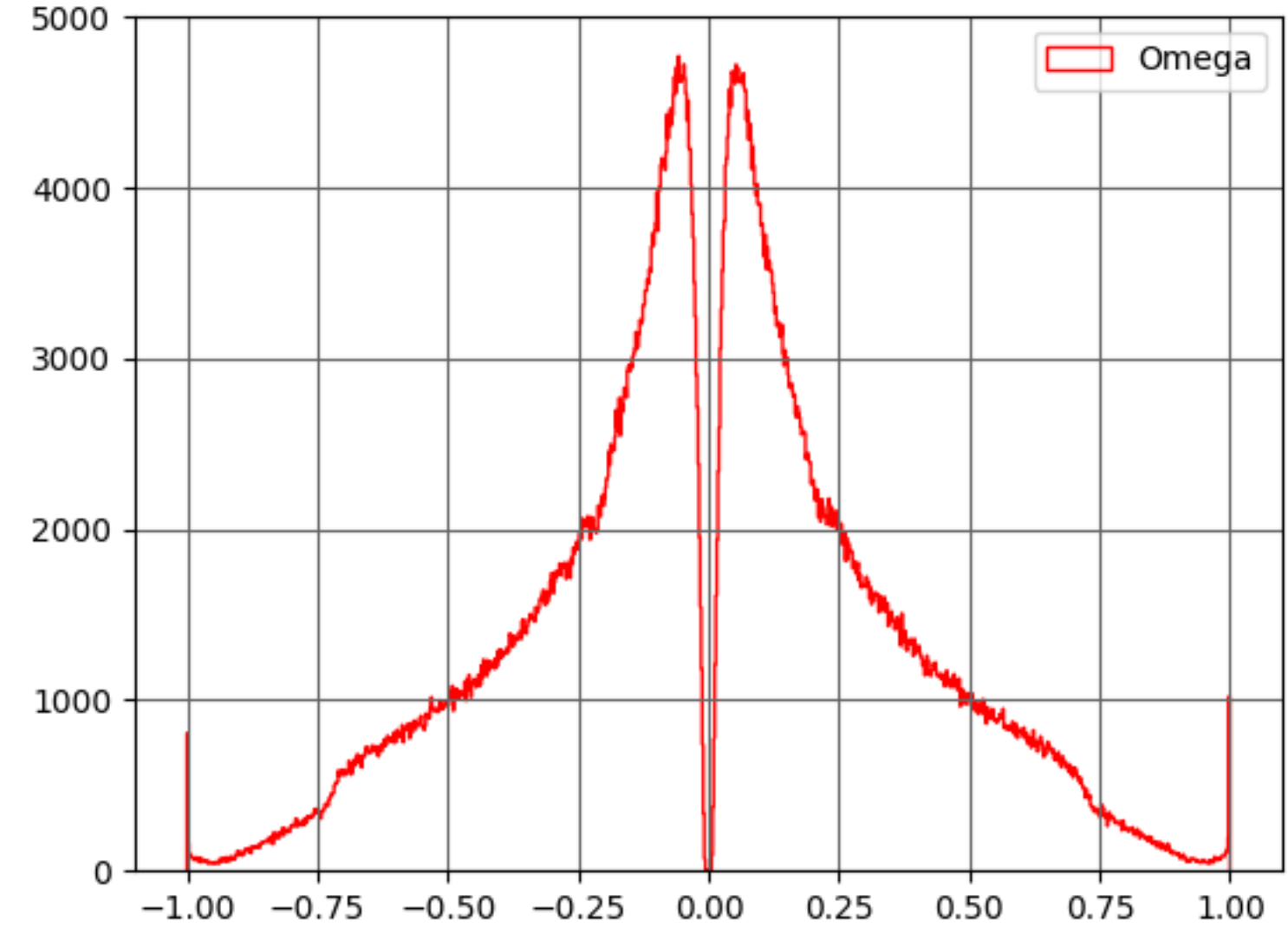
$d_0$



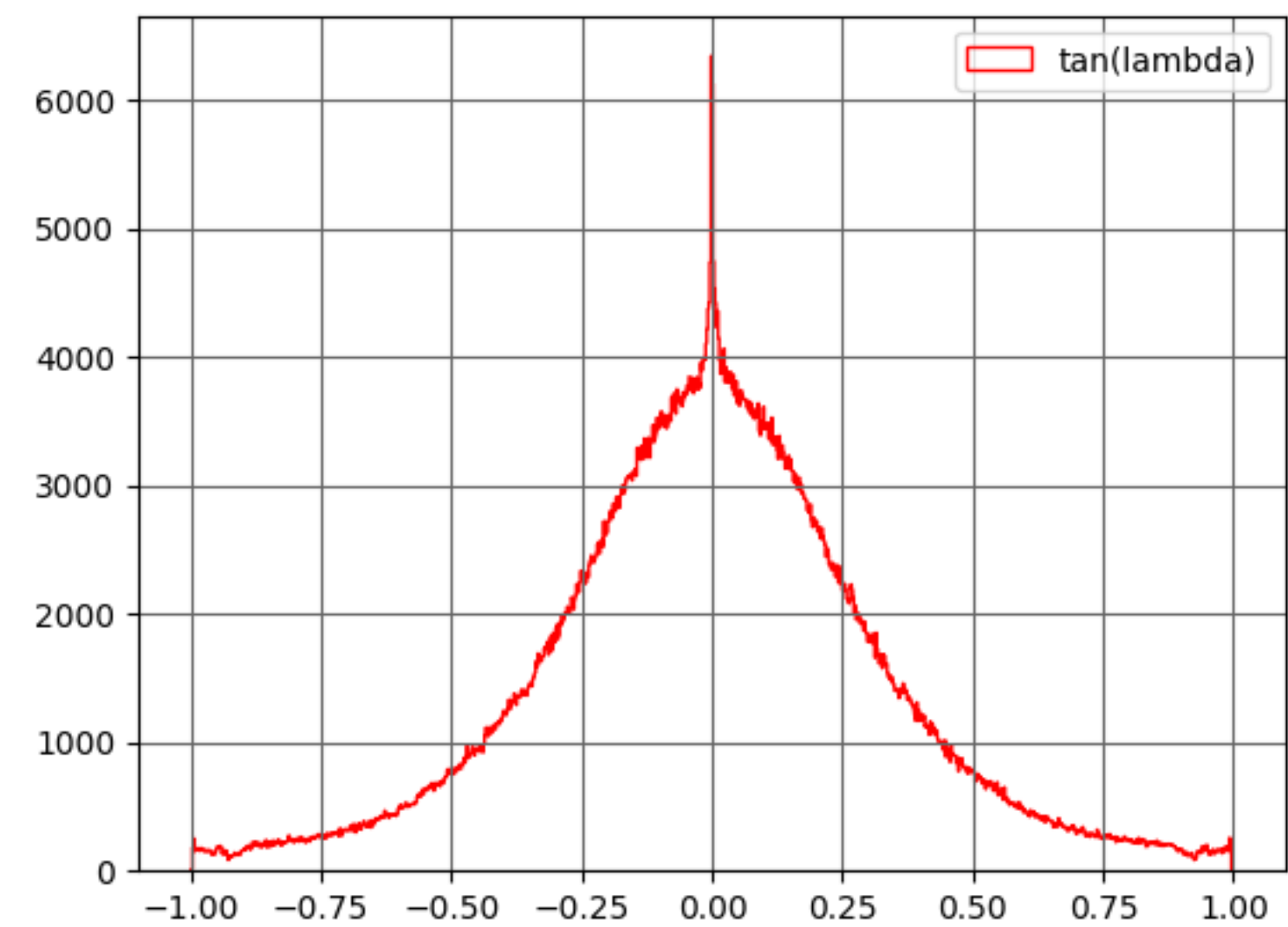
$z_0$



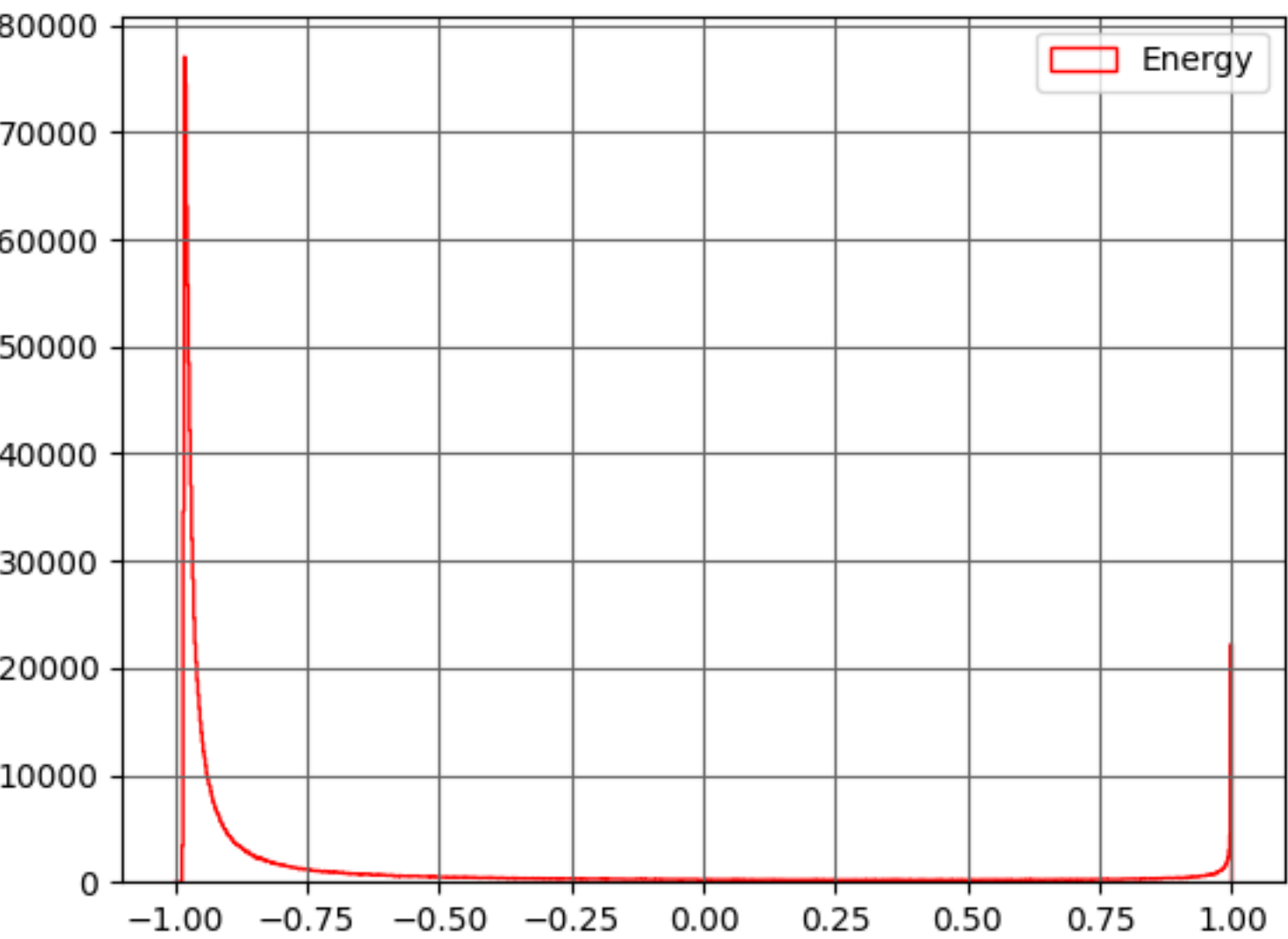
$\phi$



$\Omega$

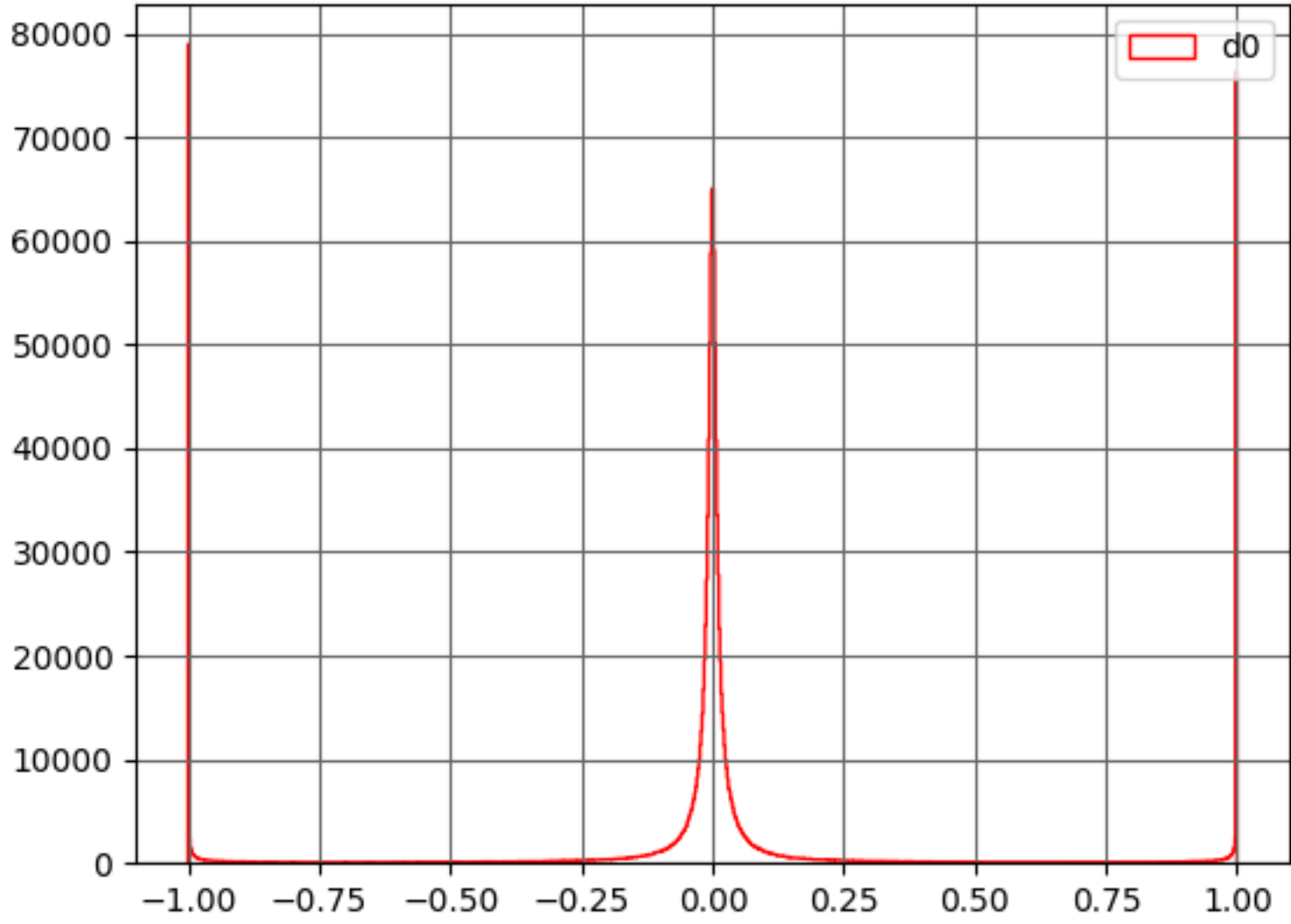


$\tan(\lambda)$

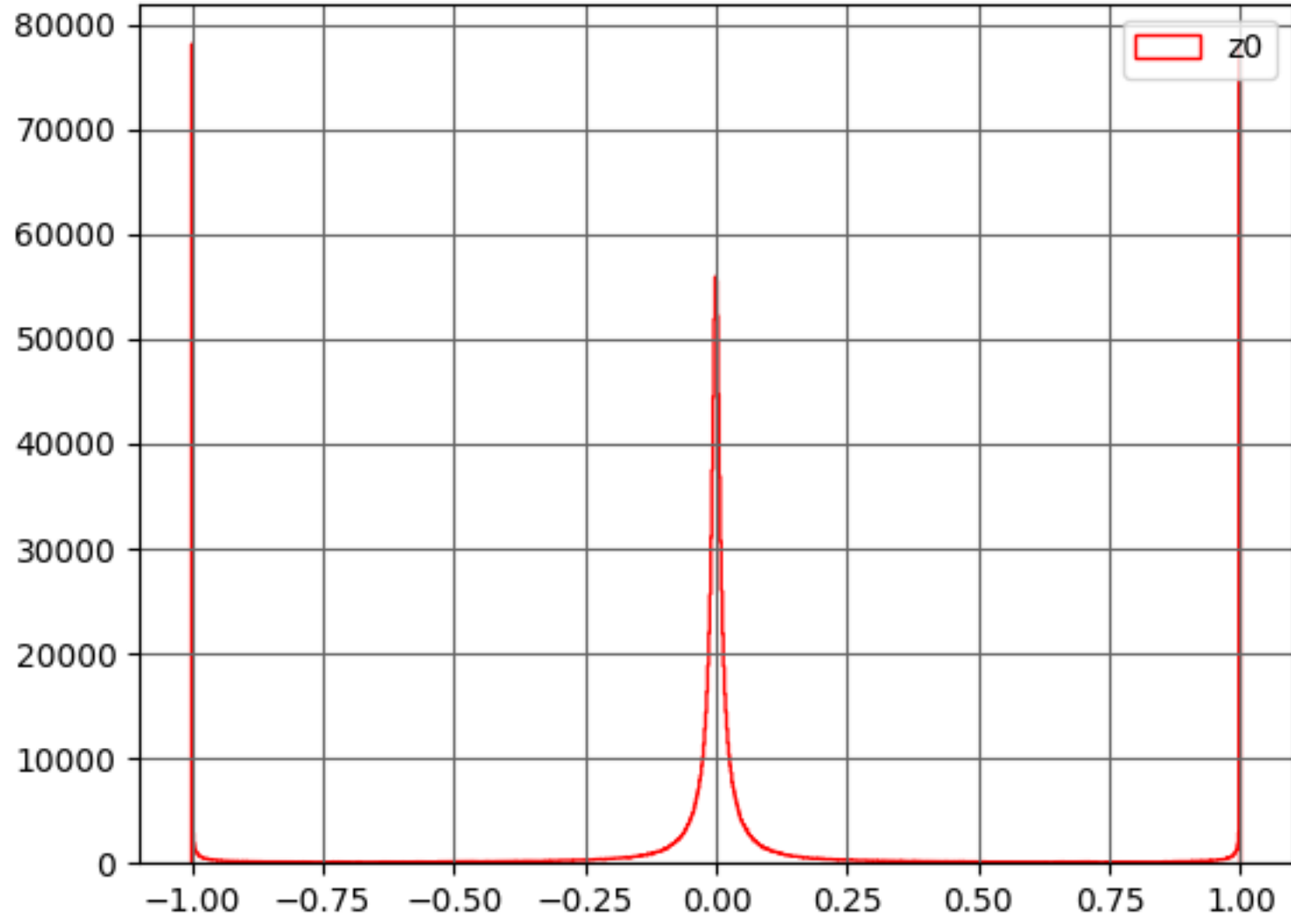


Energy

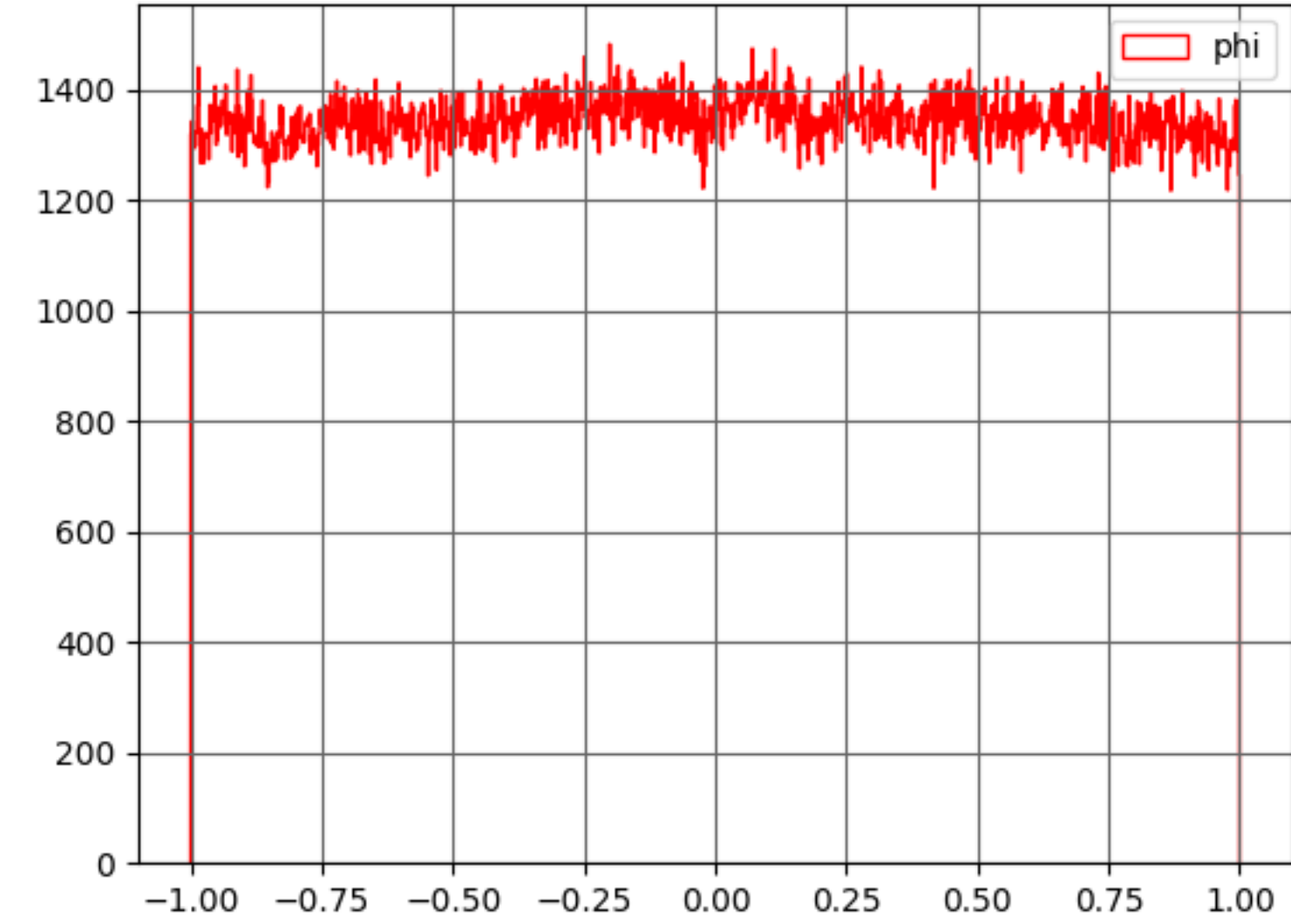
終状態  $c\bar{c}$



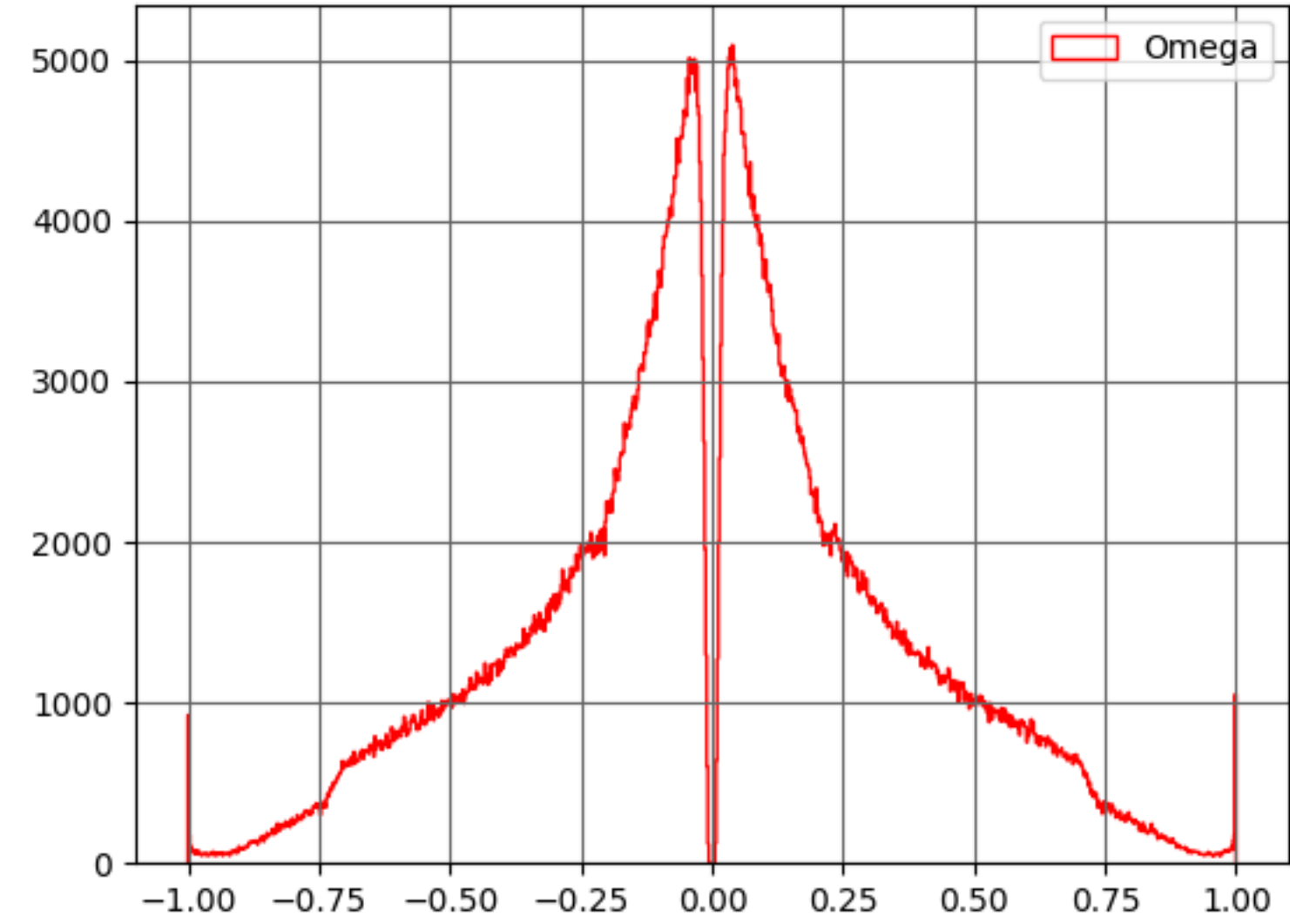
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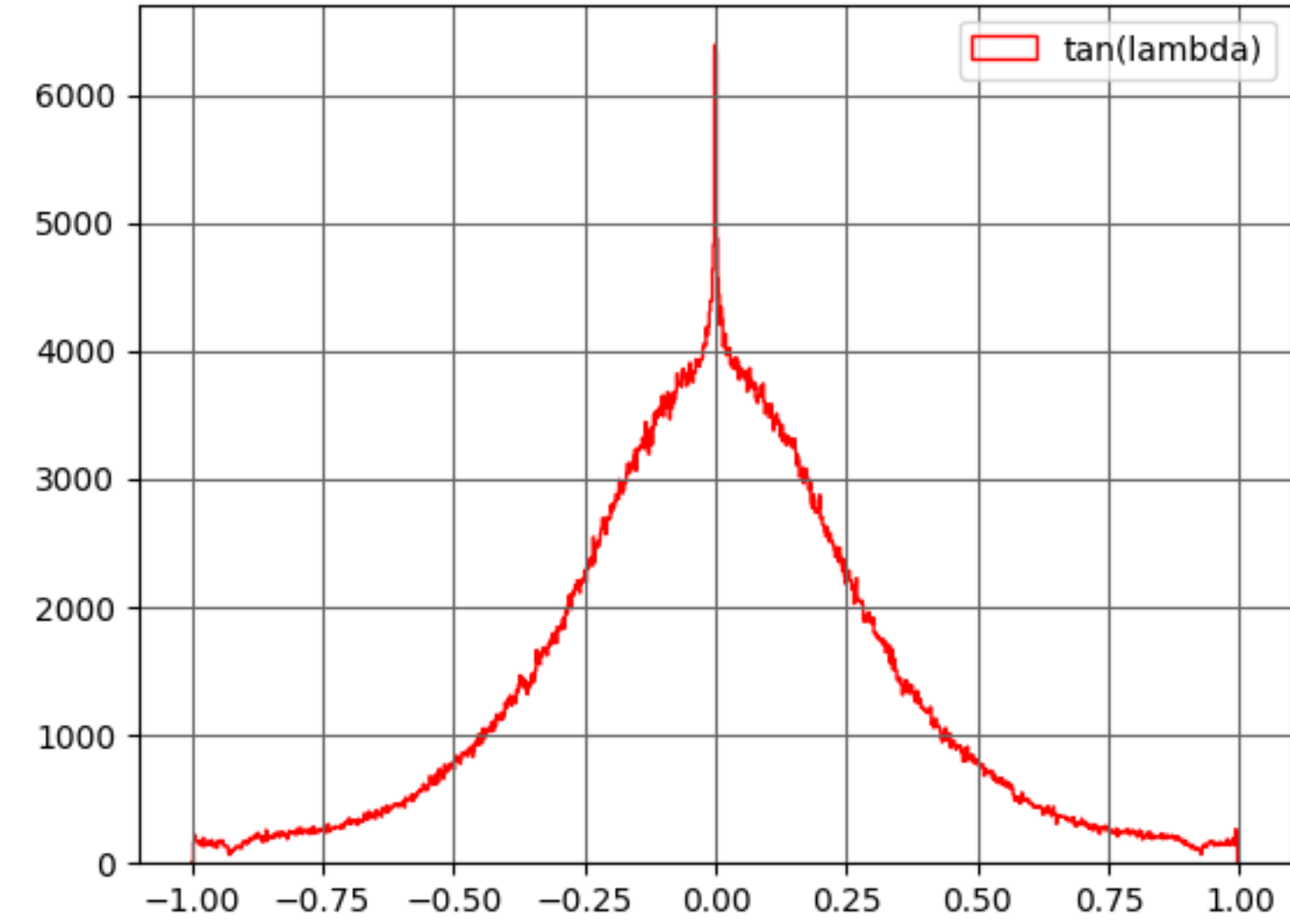
$z_0$



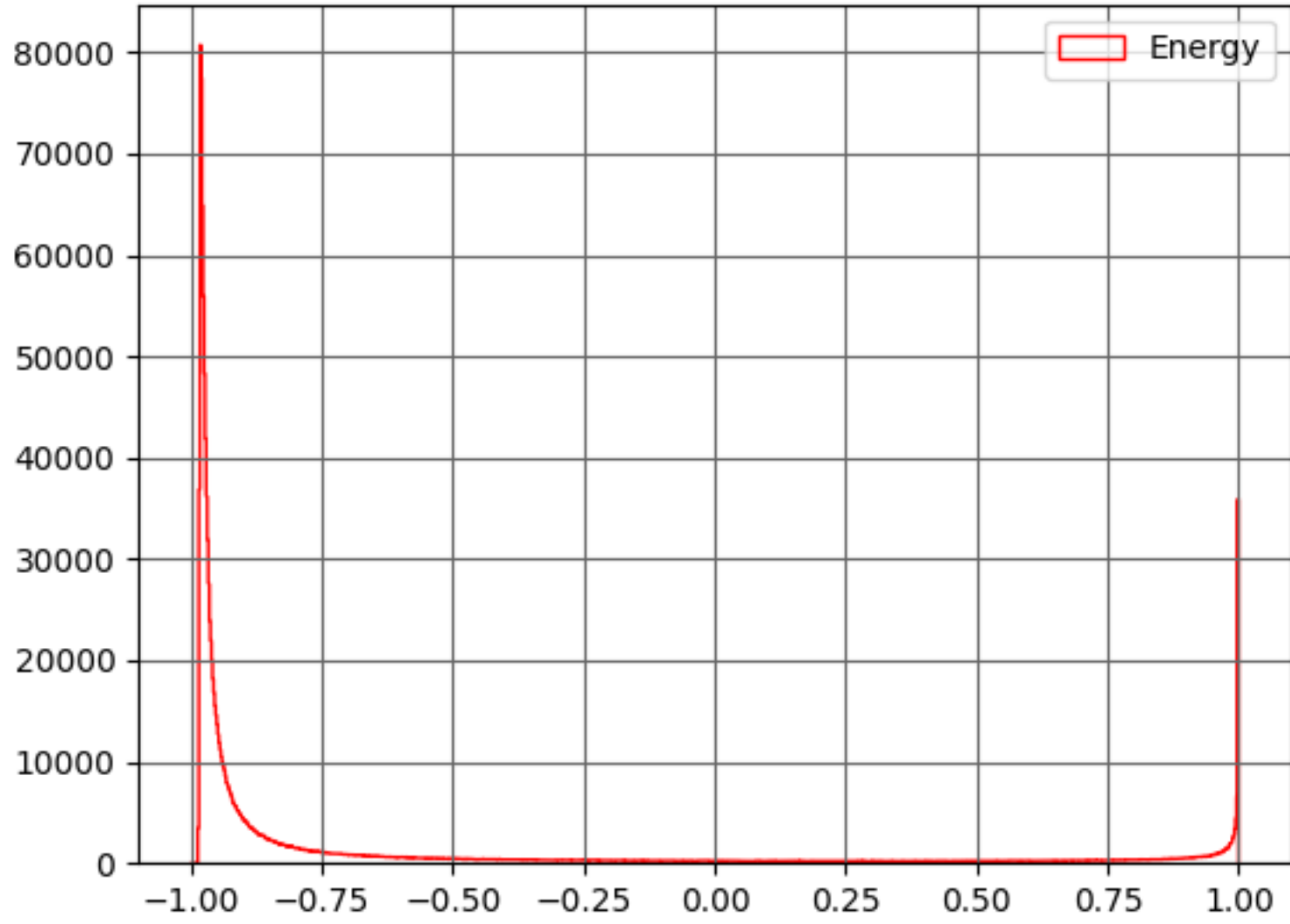
$\phi$



$\Omega$



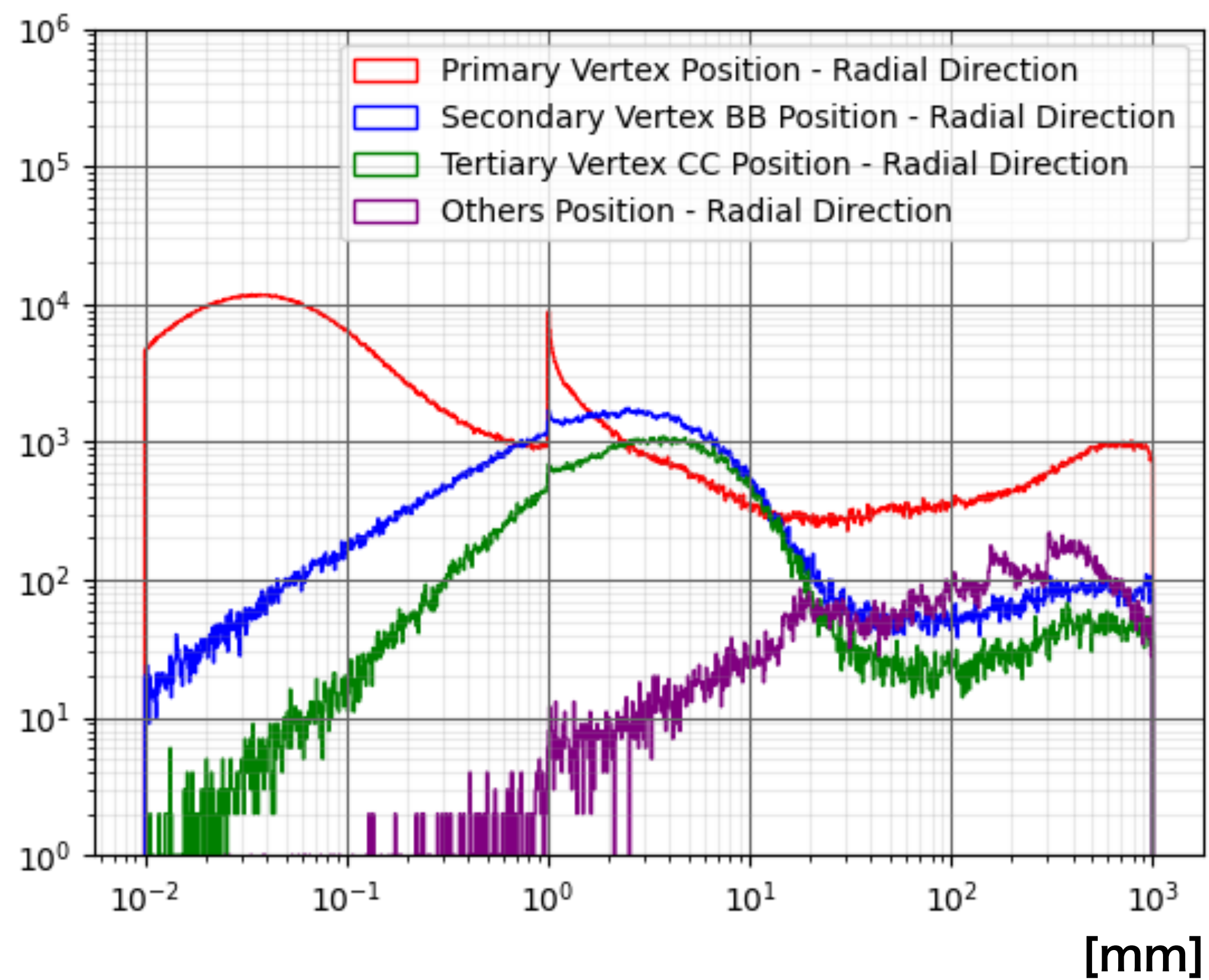
$\tan(\lambda)$



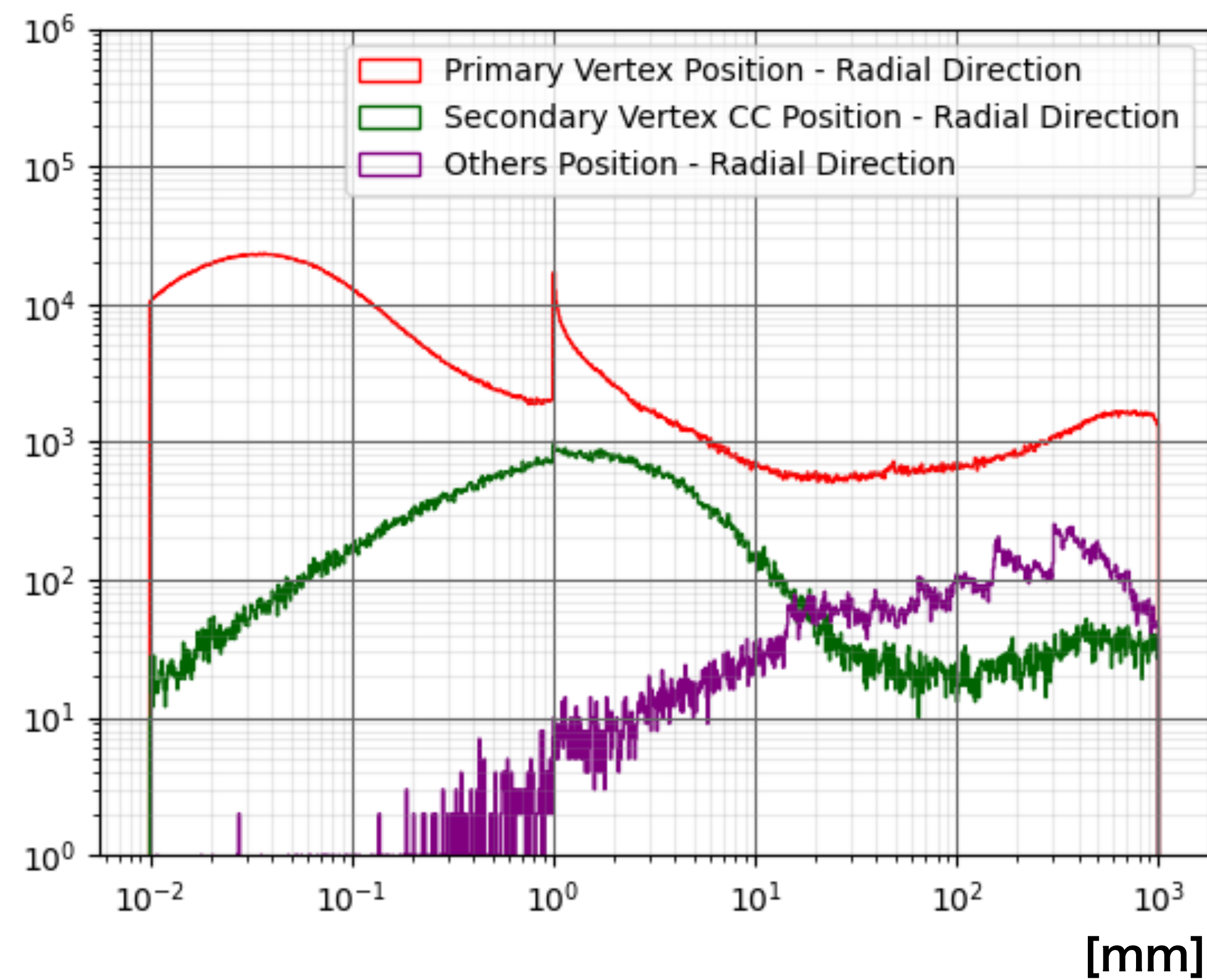
Energy



終状態  $b\bar{b}$



終状態  $c\bar{c}$

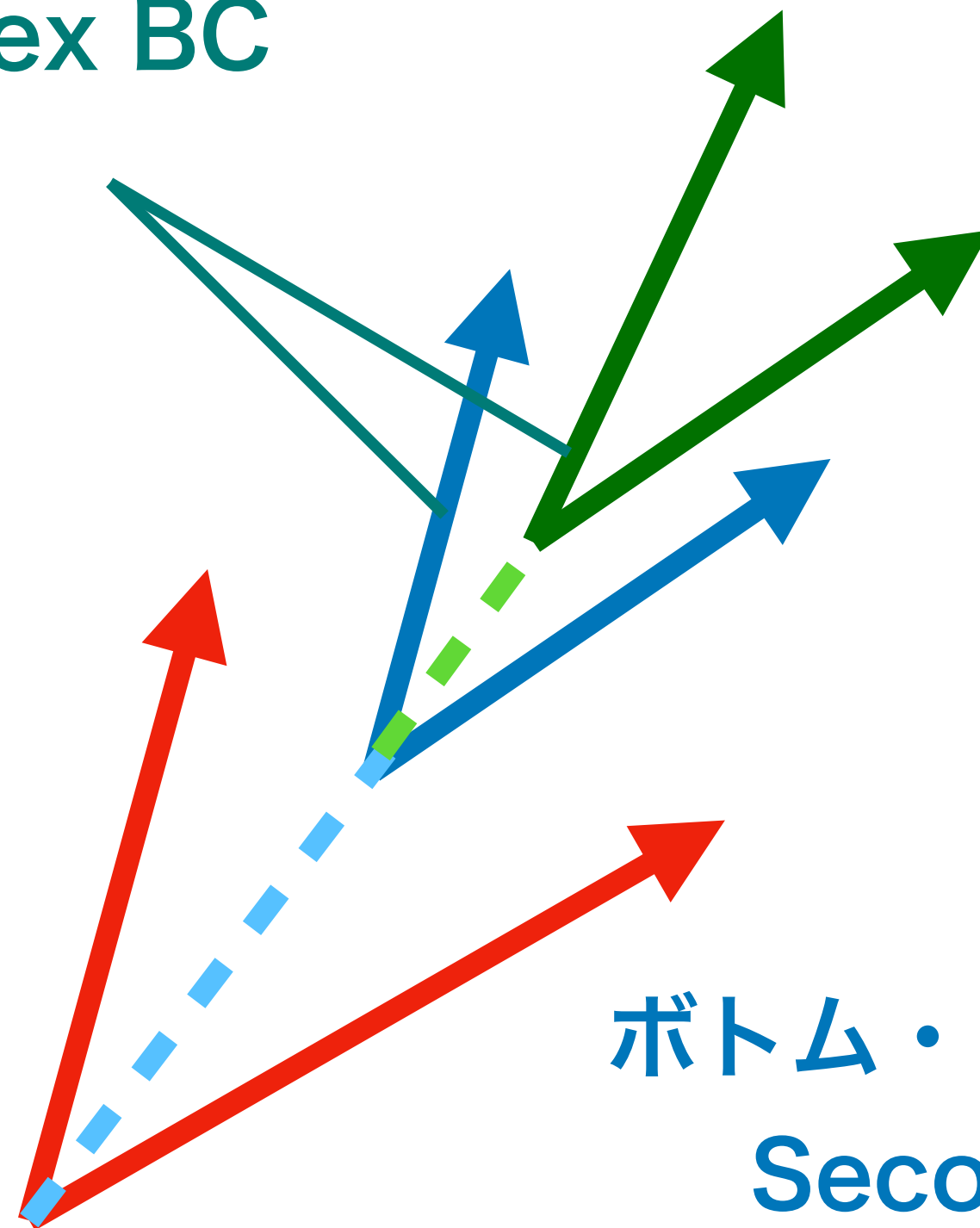


Secondary Vertex BC  
(SVBC)

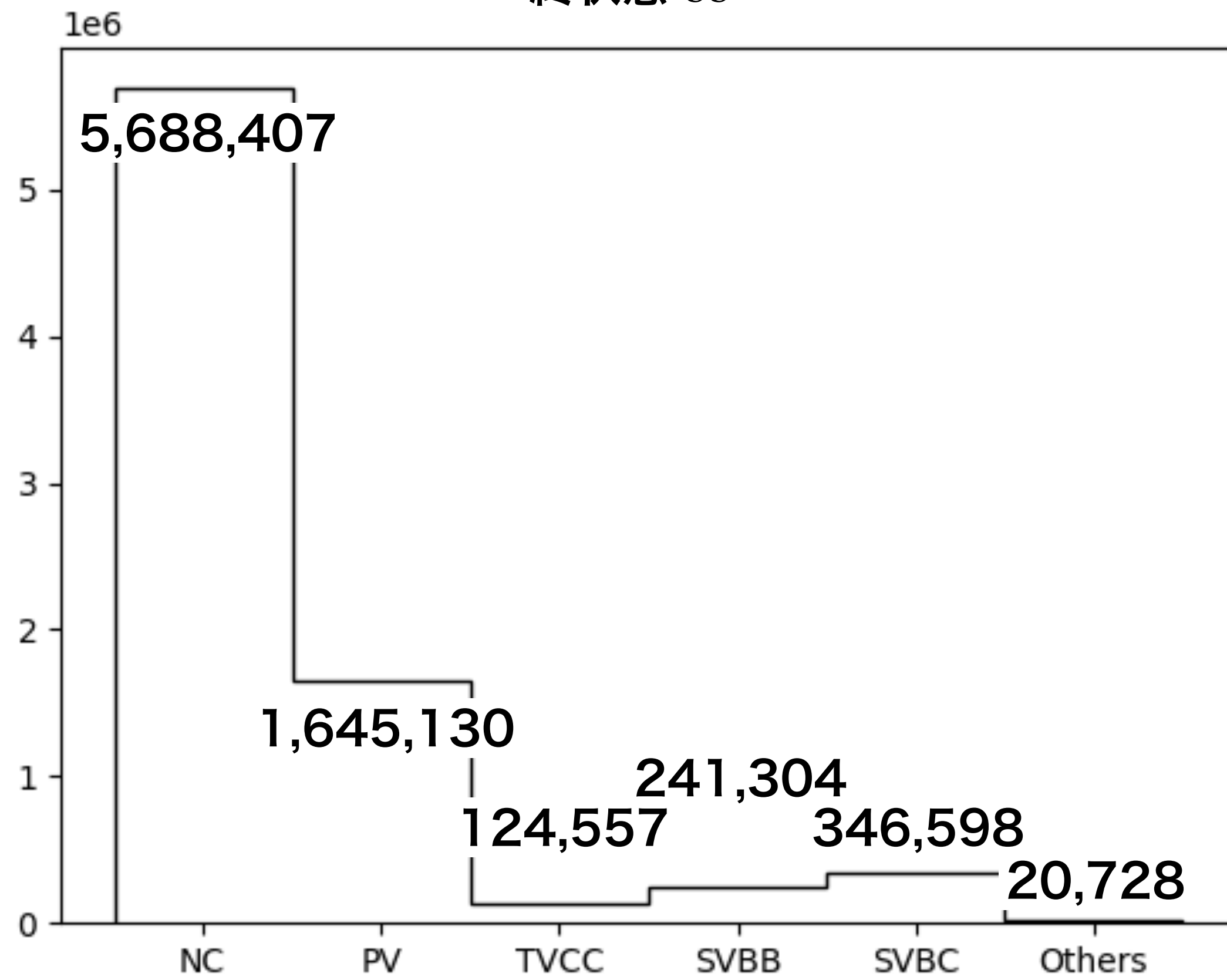
チャーム・フレーバーのハドロンによる  
Tertiary Vertex (TBCC)

ボトム・フレーバーのハドロンによる  
Secondary Vertex (SVBB)

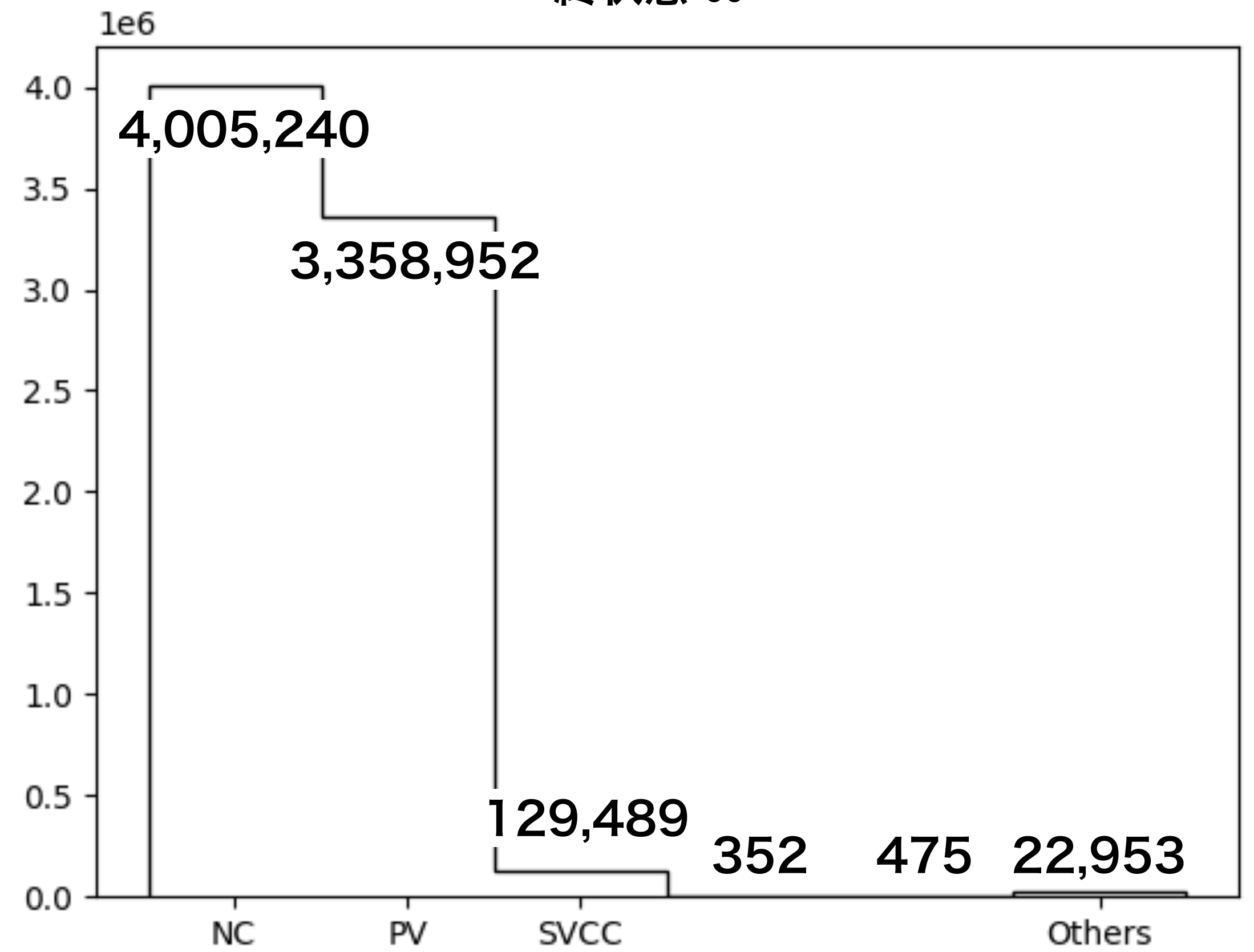
IP  
Primary Vertex



終状態  $b\bar{b}$

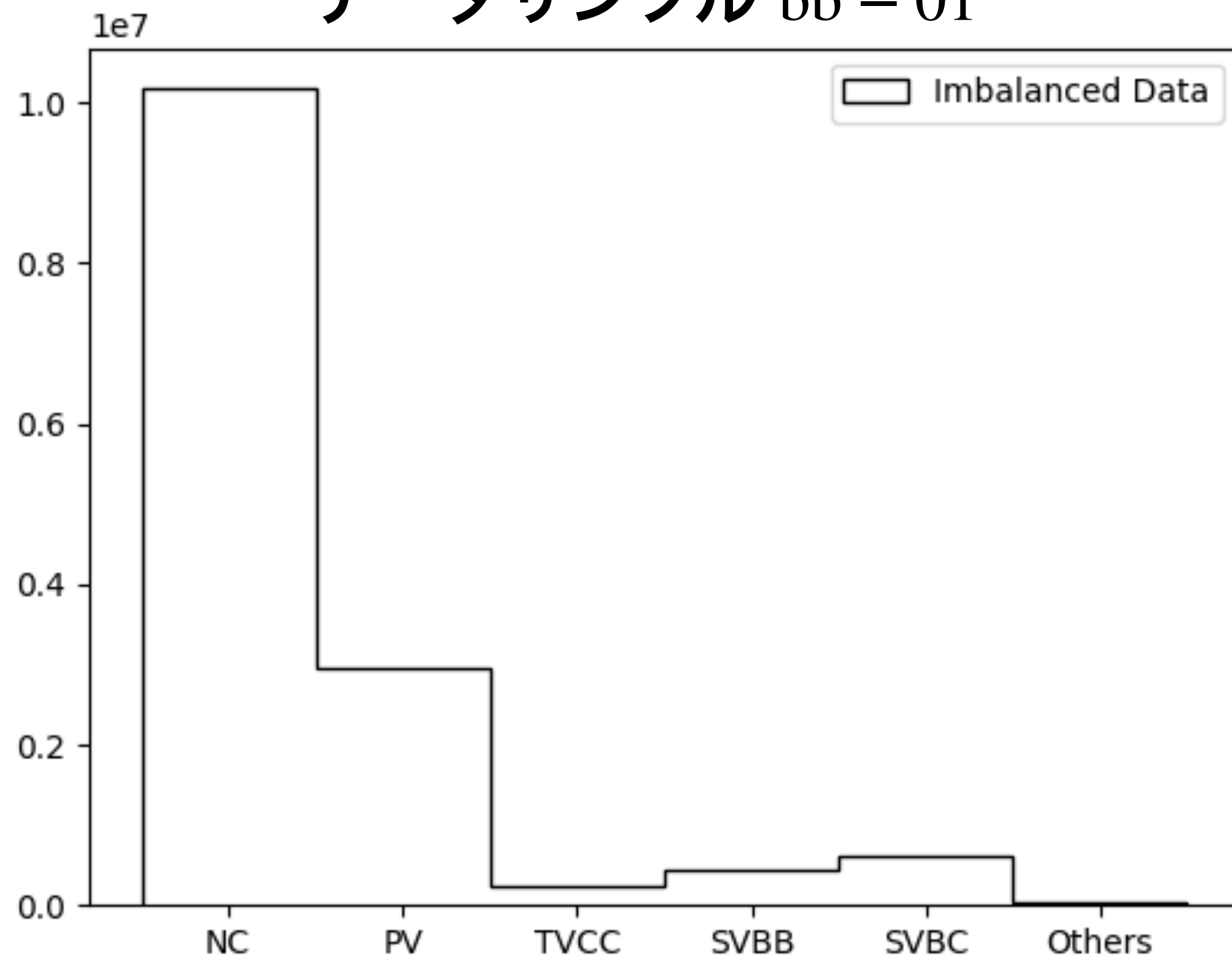


終状態  $c\bar{c}$

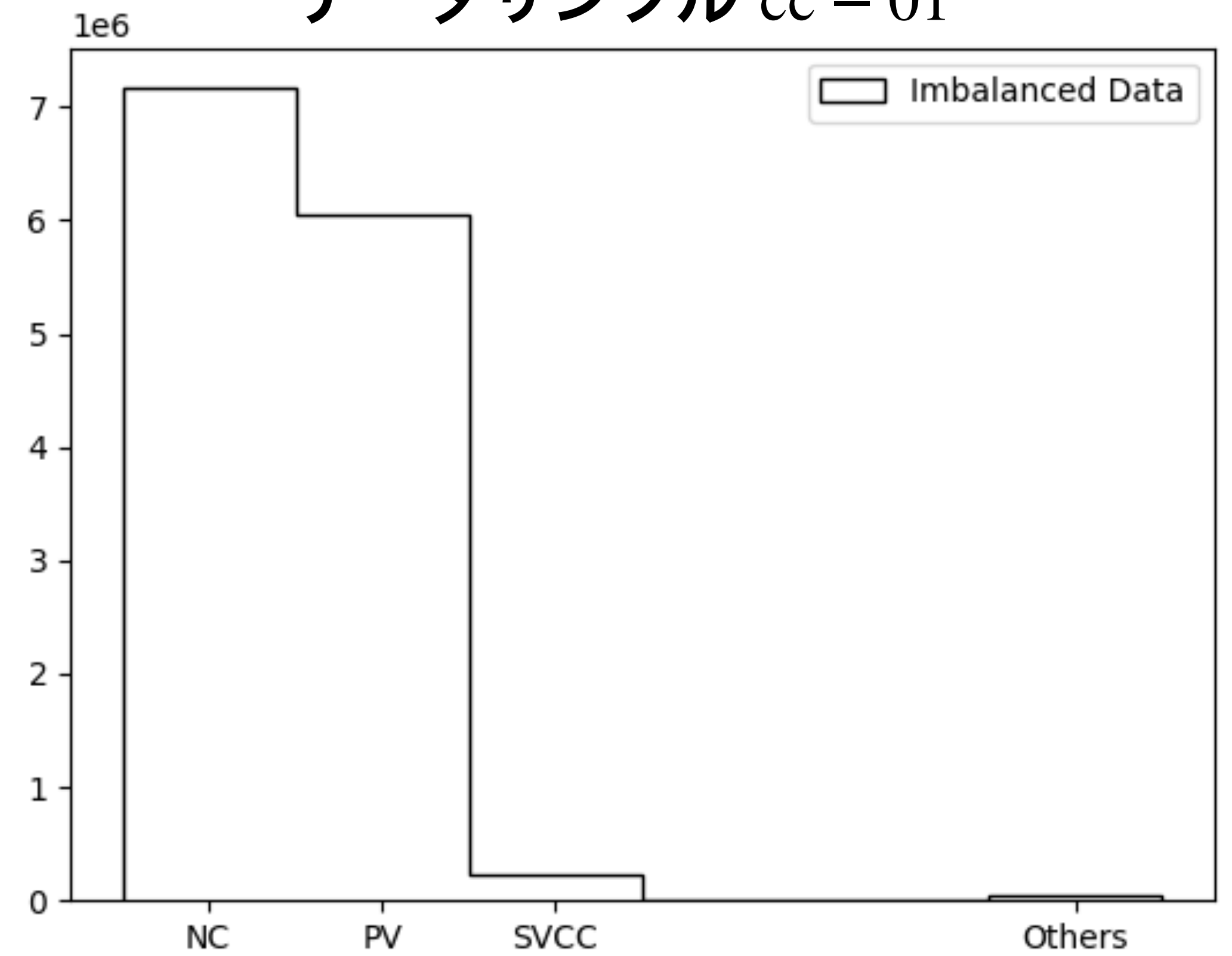




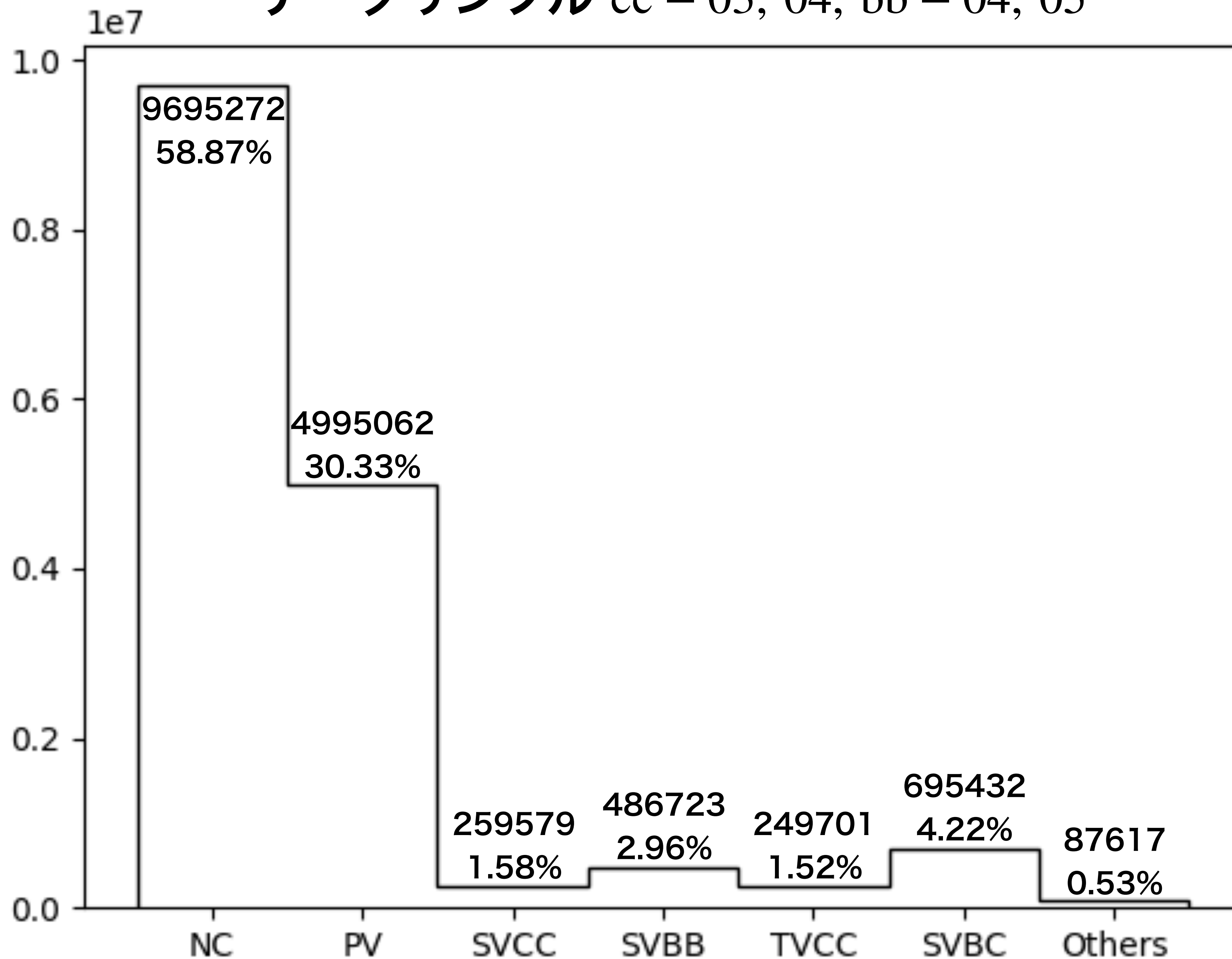
データサンプル  $b\bar{b} - 01$

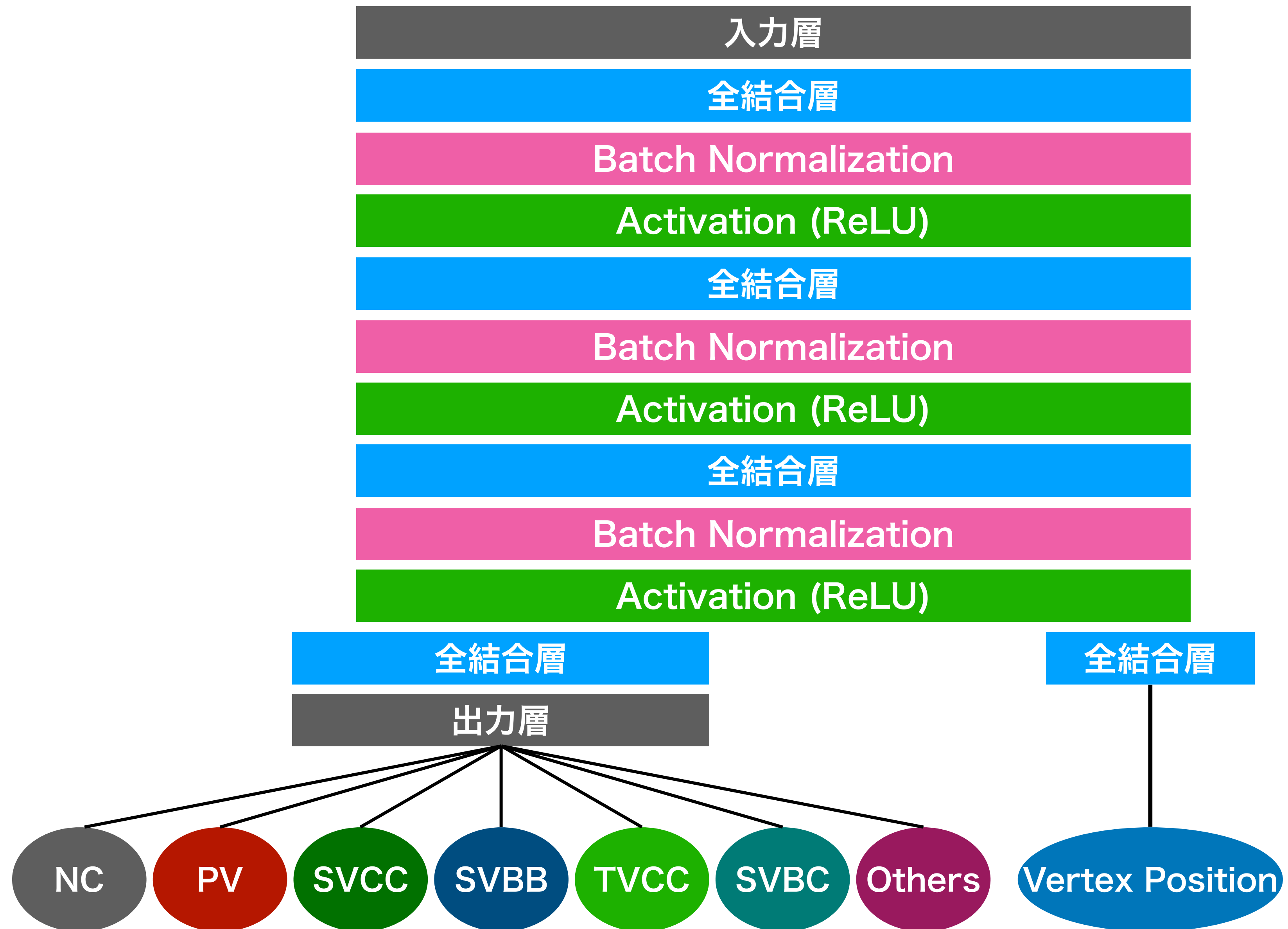


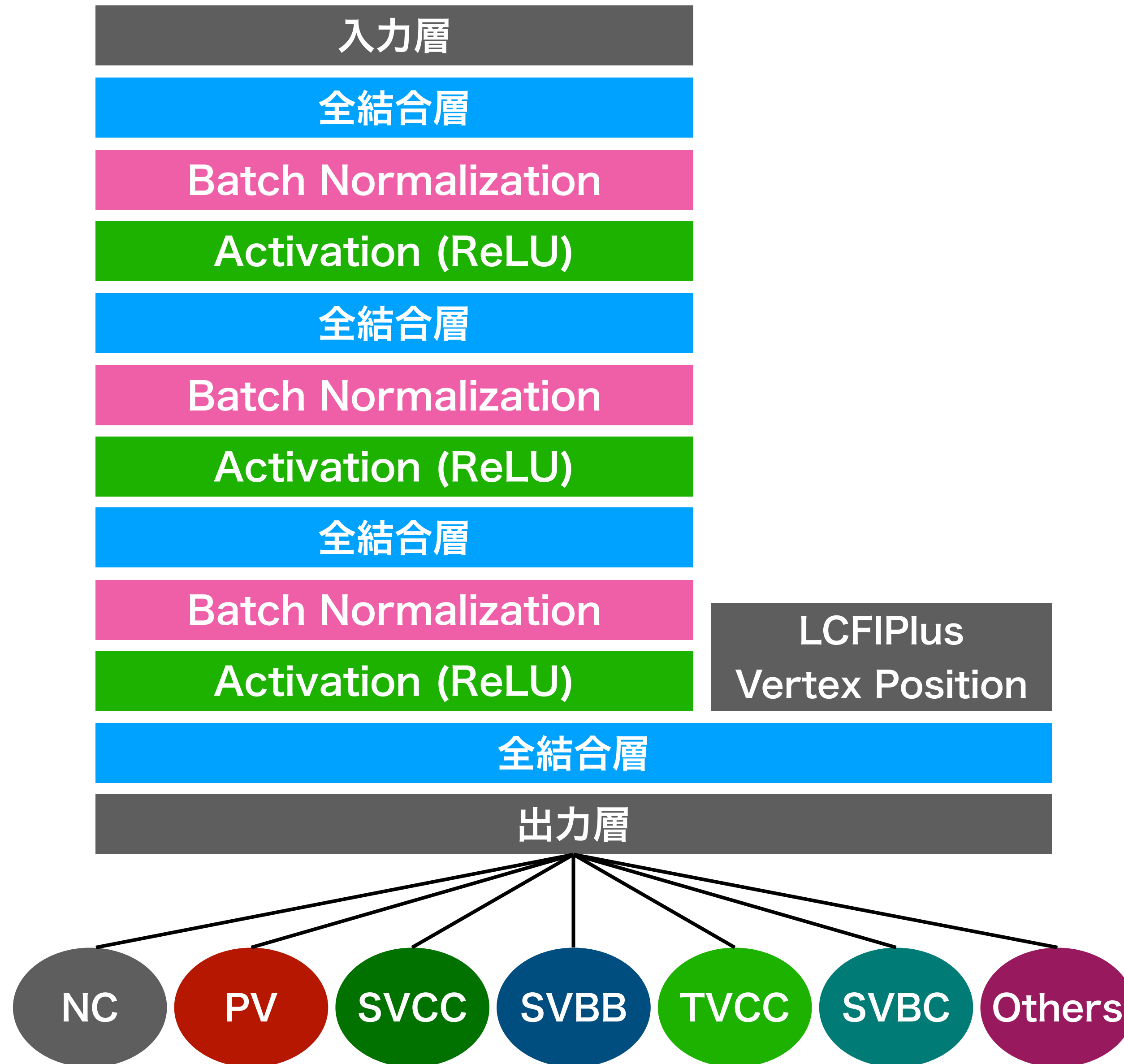
データサンプル  $c\bar{c} - 01$

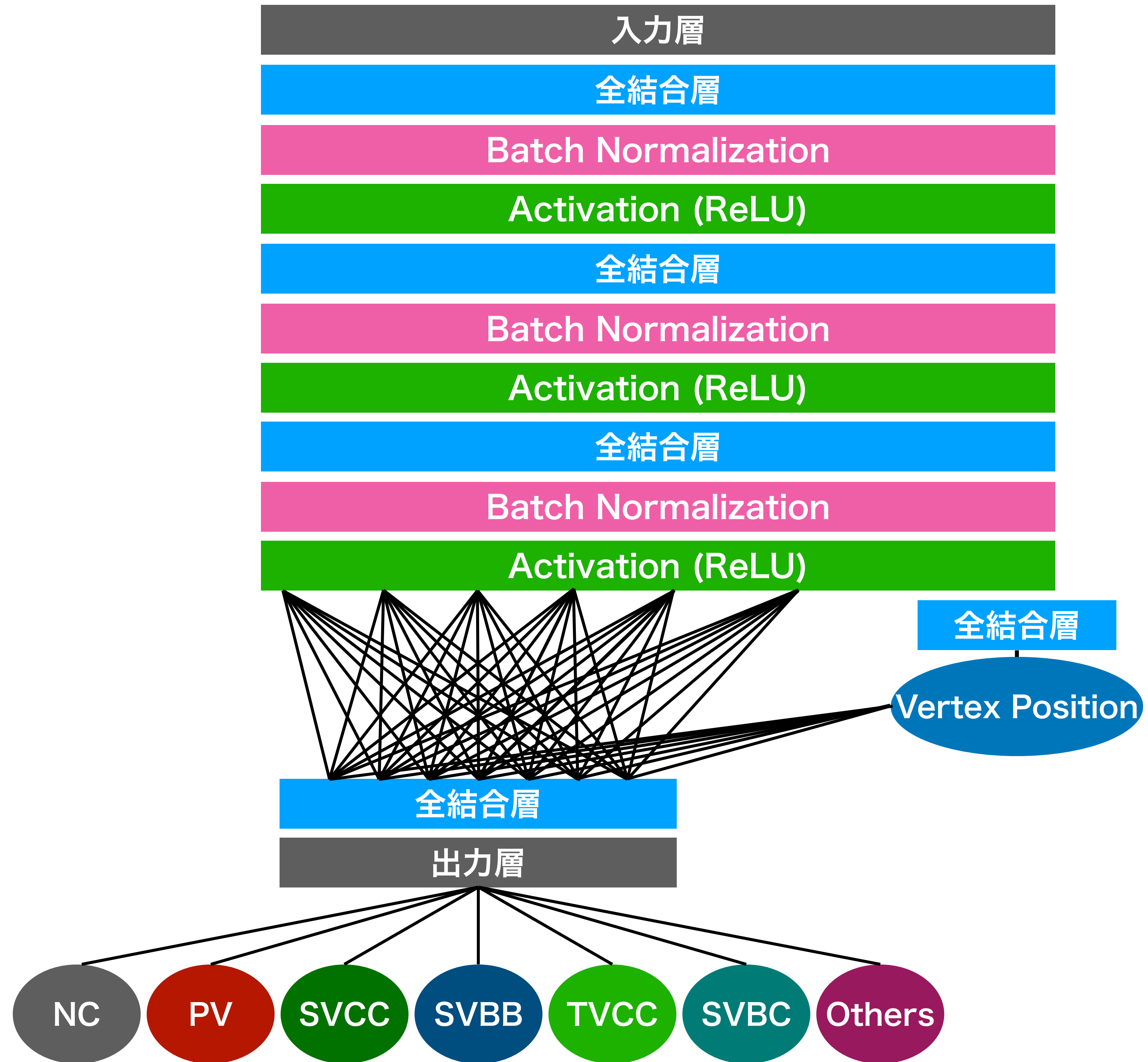


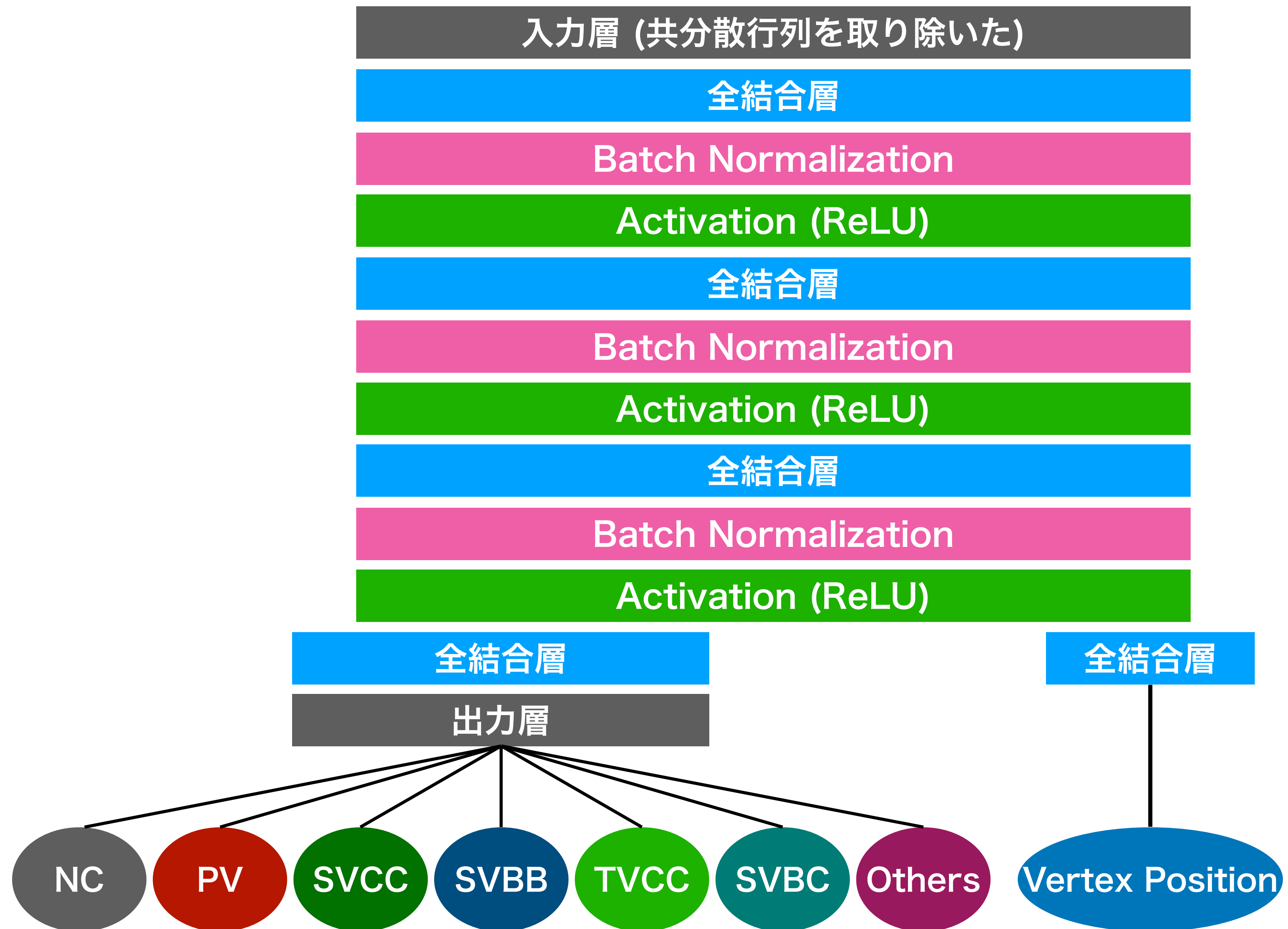
# データサンプル $c\bar{c} - 03, 04, b\bar{b} - 04, 05$











Loss

Efficiency Matrix

Purity Matrix

Vertex Position

Loss

相对值  
Efficiency Matrix

相对值  
Purity Matrix

Vertex Position



相对值  
Efficiency Matrix

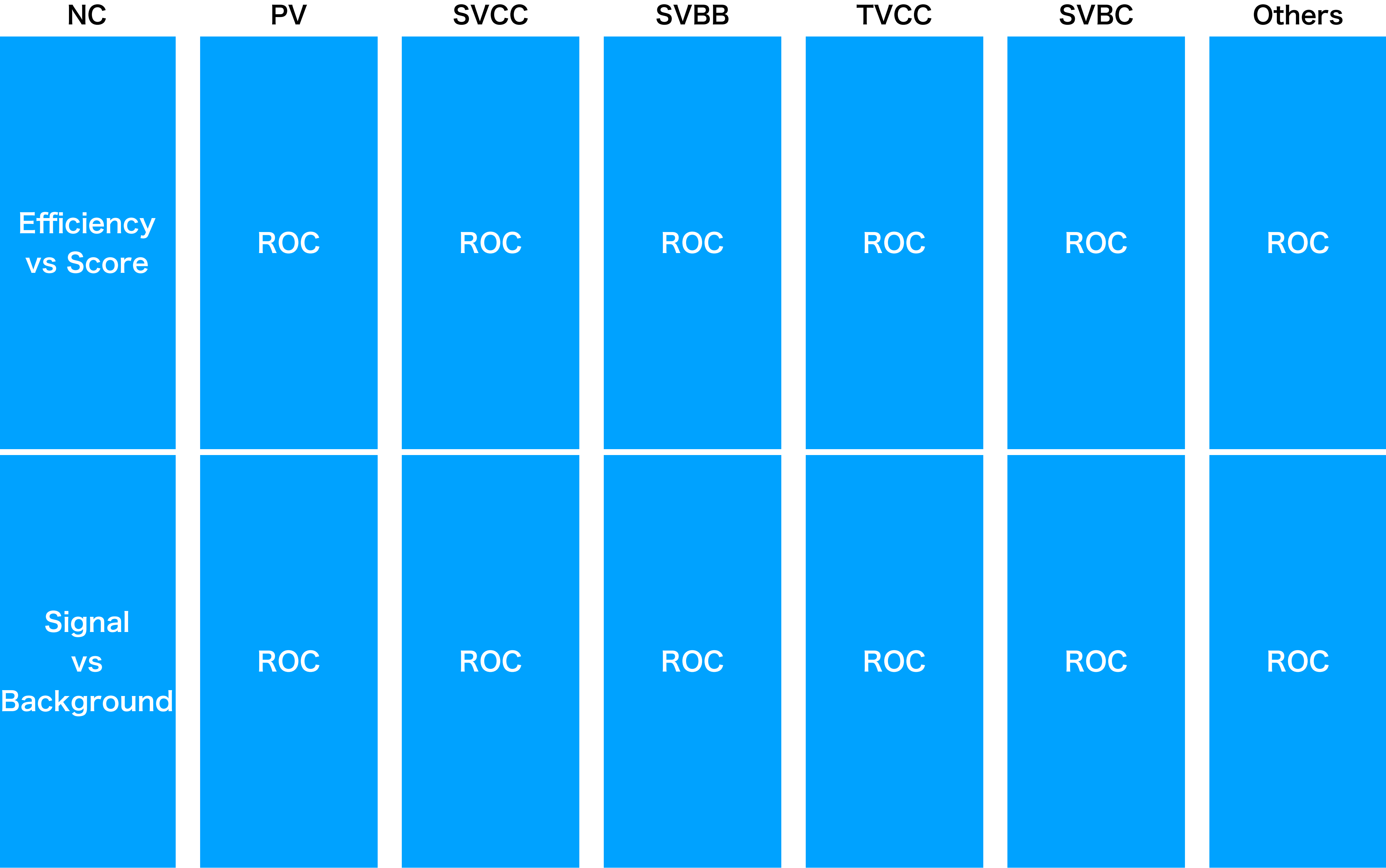
相对值  
Purity Matrix

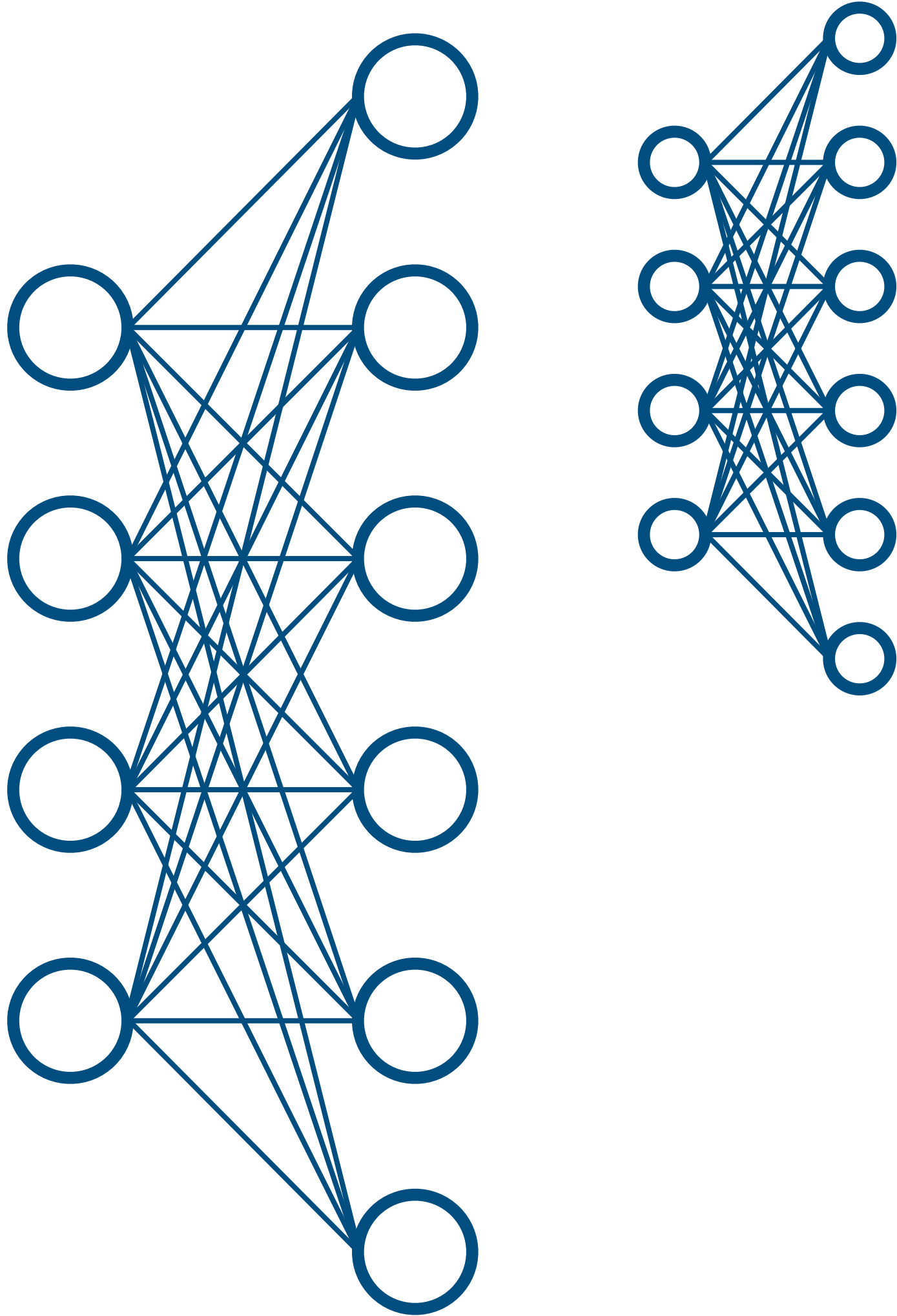
Loss

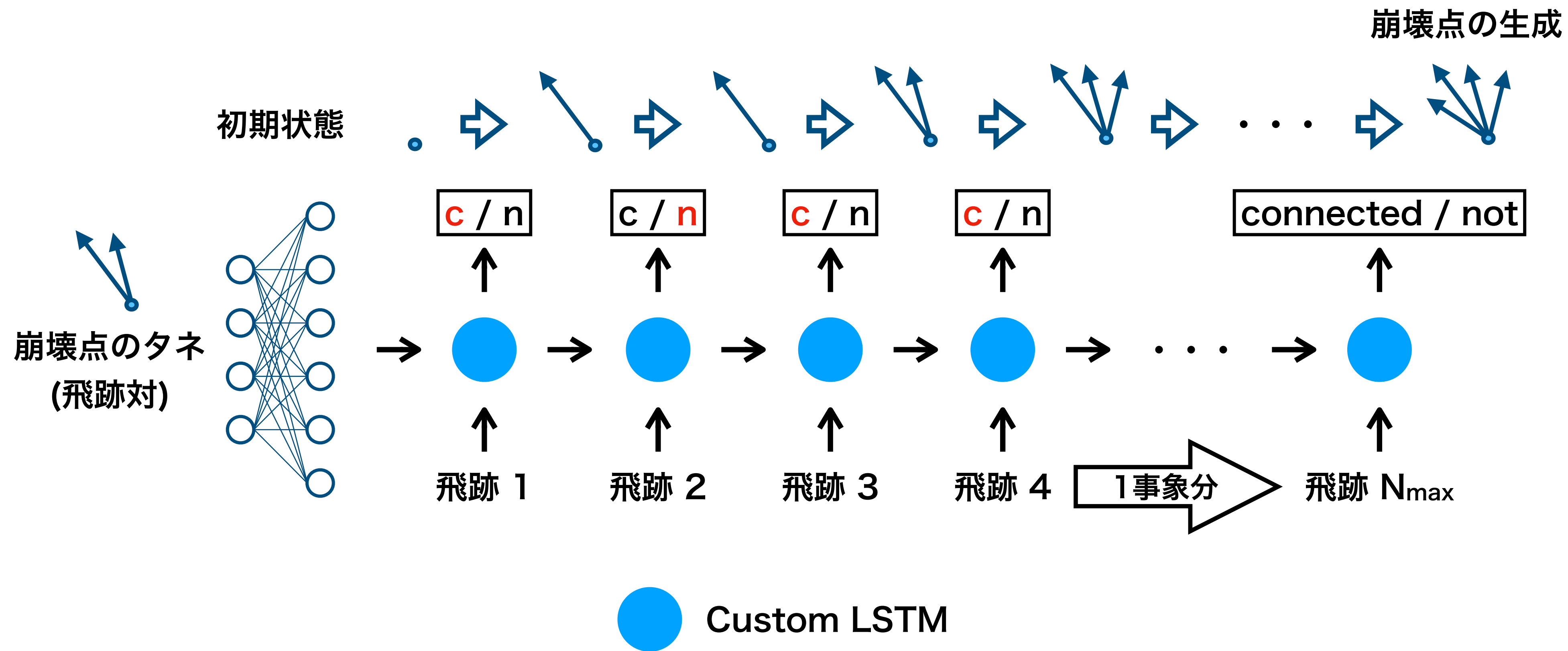
相对值  
Efficiency Matrix

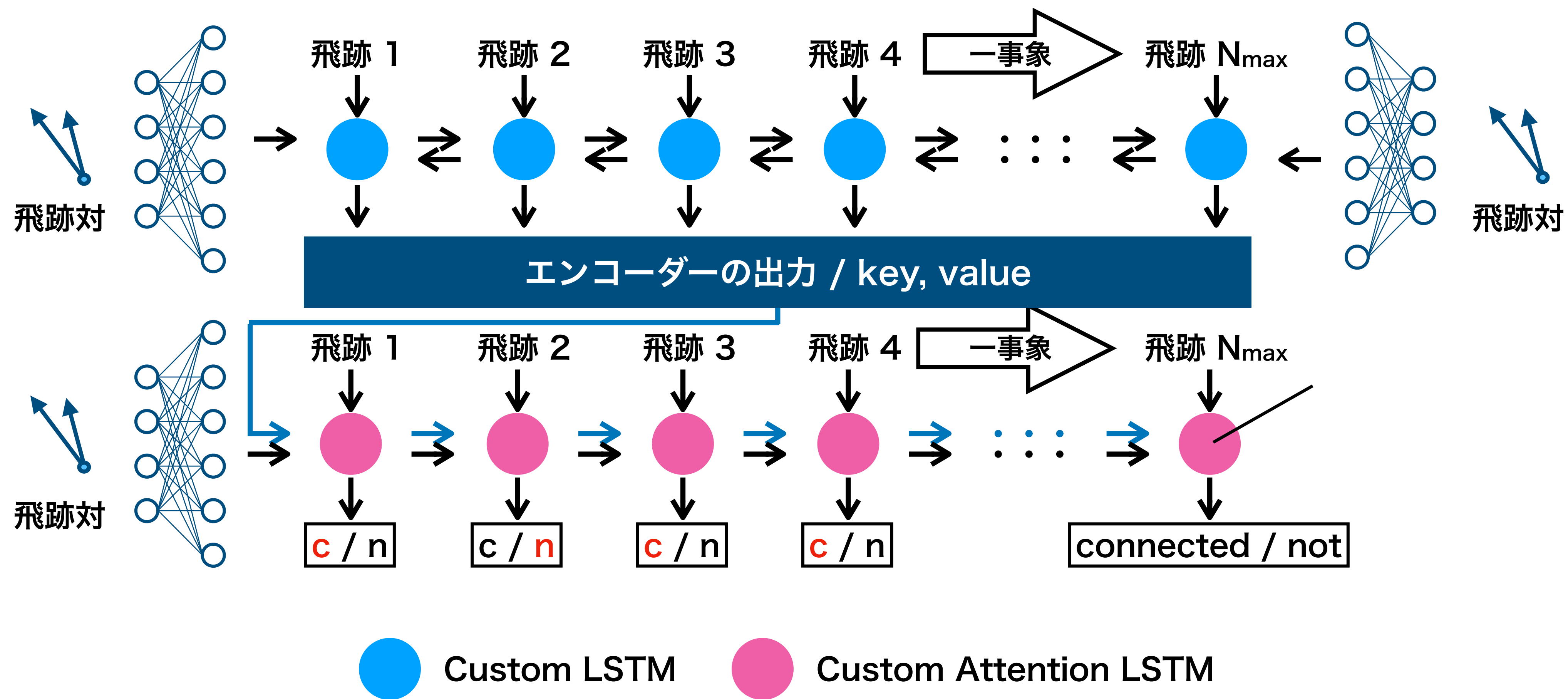
相对值  
Purity Matrix

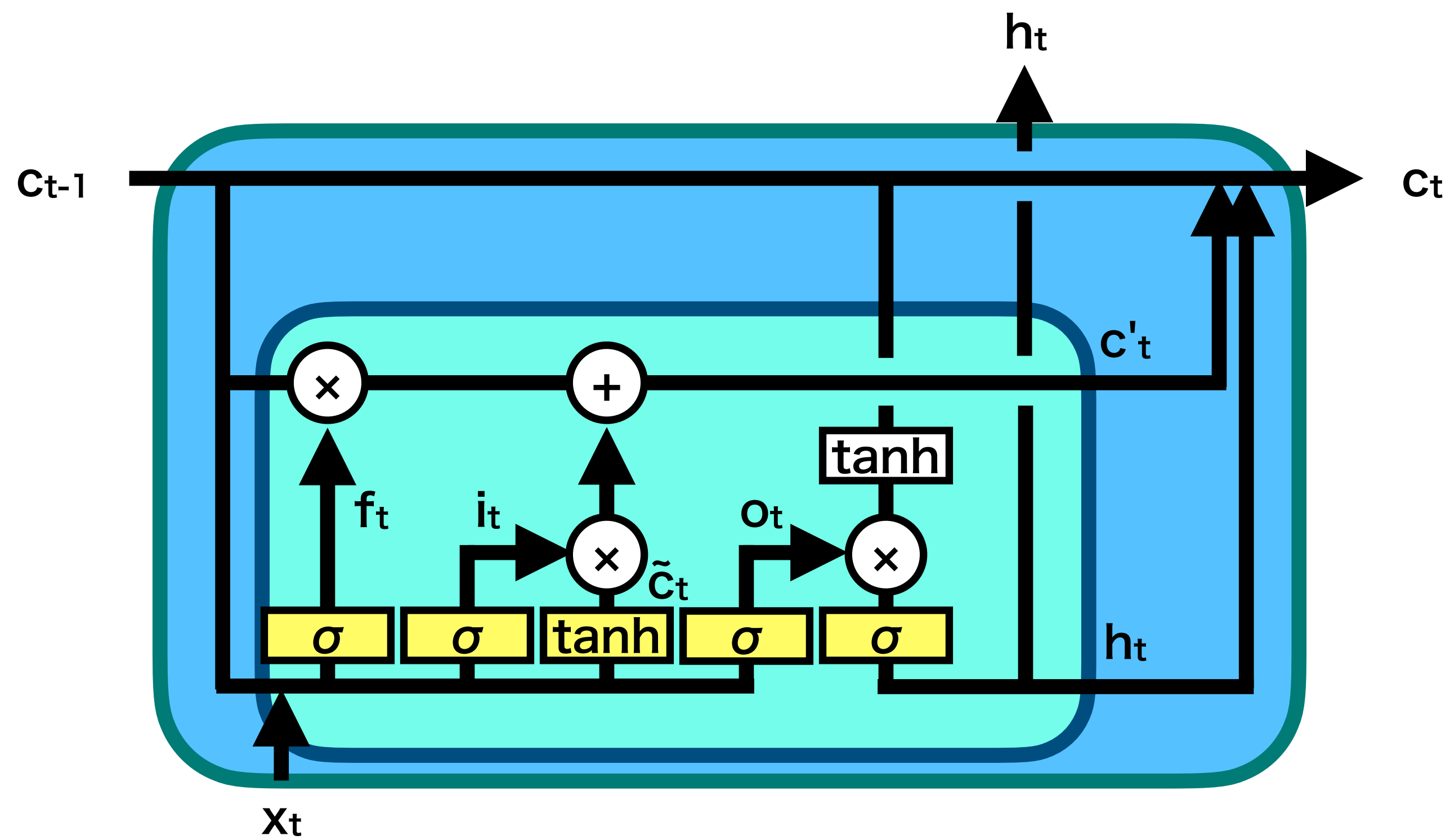
Vertex Position

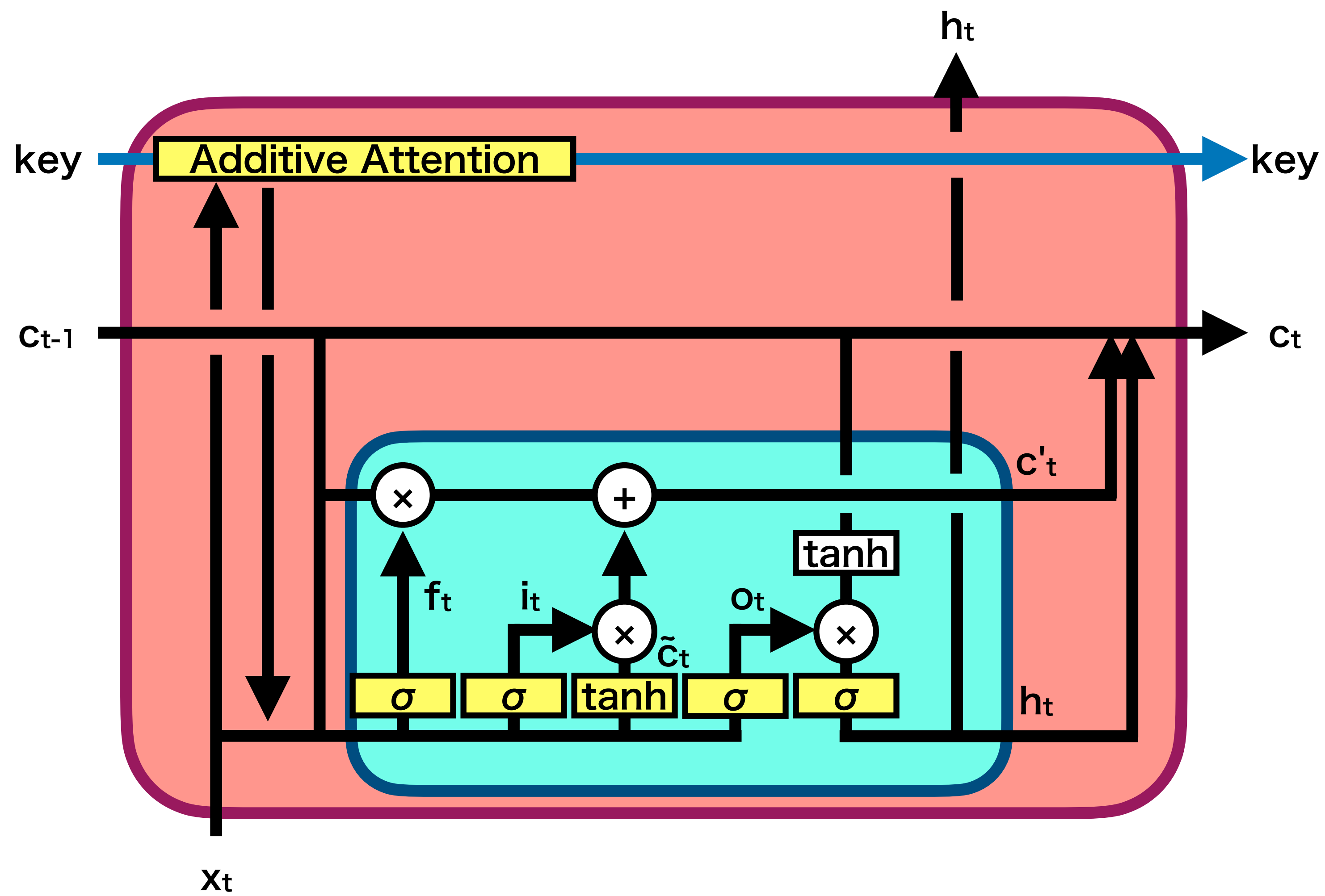




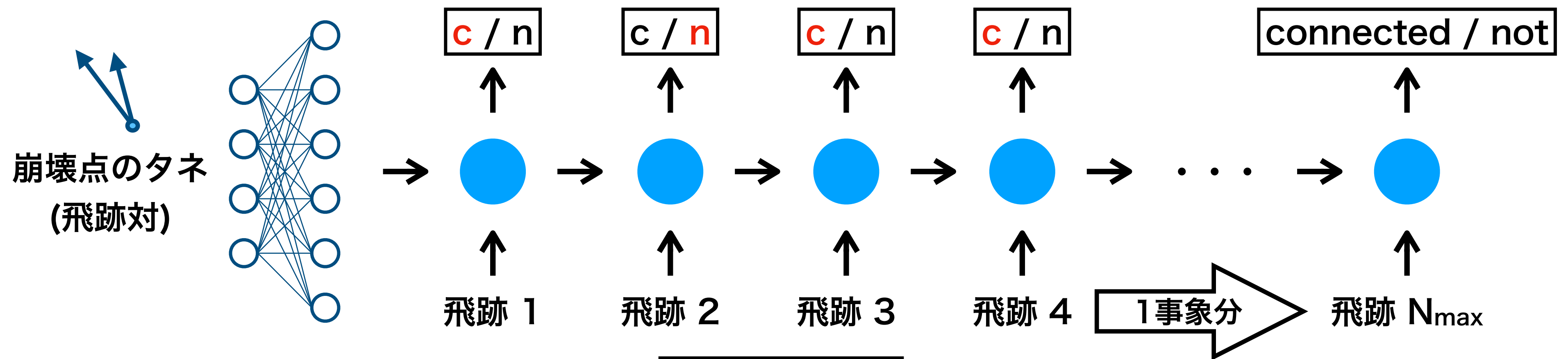




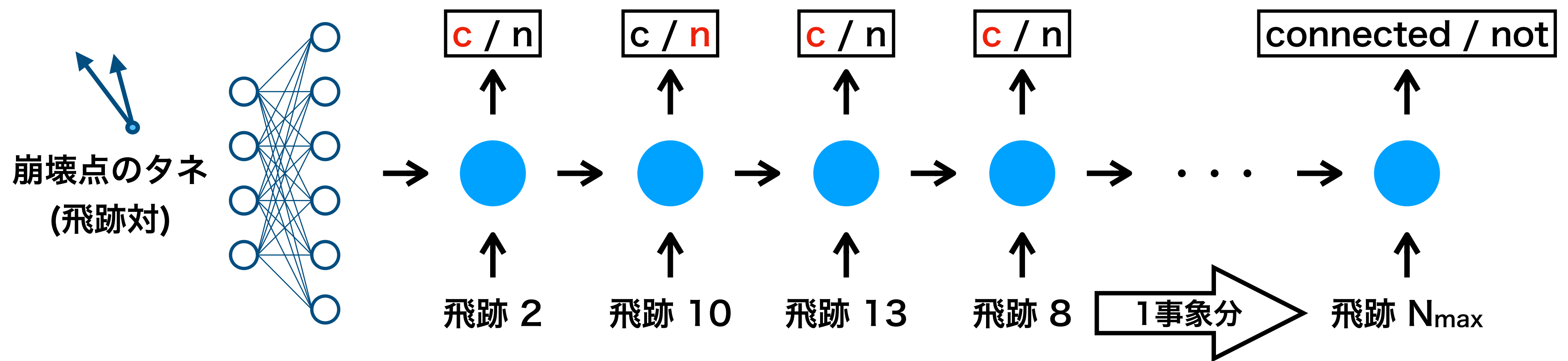








1エPOCH後



飛跡順のシャッフル