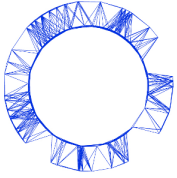


# Theory



IPhO 2018  
Lisbon, Portugal

# A2-1

English (Official)

## Where is the neutrino? (10 points)

### Part A. ATLAS Detector Physics (4.0 points)

**A.1** (0.5 pt)

$r =$

**A.2** (0.5 pt)

$p =$

**A.3** (1.0 pt)

$\xi =$                        $n =$                        $k =$

**A.4** (1.0 pt)

$\alpha =$

**A.5** (0.5 pt)

$\Delta E =$

**A.6** (0.5 pt)

$\omega(t) =$

### Part B. Finding the neutrino (6.0 points)

**B.1** (1.5 pt)

$m_W^2 =$

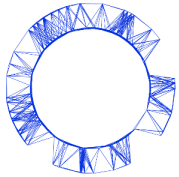
**B.2** (1.5 pt)

$p_z^\nu =$                       or                       $p_z^\nu =$

**B.3** (1.0 pt)

$m_t =$                       or                       $m_t =$

## Theory



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# A2-2

English (Official)

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**B.4** (1.0 pt)

Most likely candidate:

**B.5** (1.0 pt)

$d =$