

1 1

1.1 1

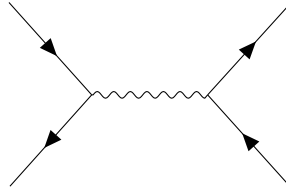


Figure 1: fig:feynmandiagram.1

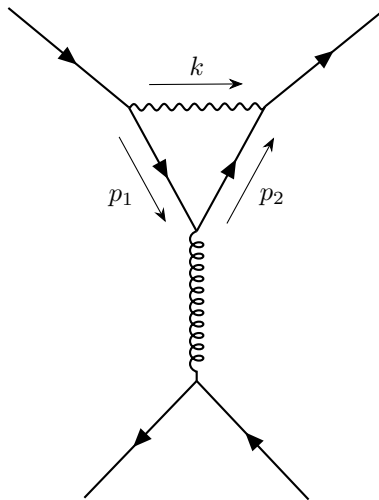


Figure 2: fig:feynmandiagram.2

/graph drawing/spring layout= <string> (no default)
Modifies the vertex so that it has a small filled square.
Modifies the vertex so that it has a small empty circle.
Modifies the vertex so that it has a small circle with a cross inside.
Modifies the vertex so that it is a large blob, usually used to denote an effective operator.

1.1.1 Edge Keys

Draws a sinusoidal line with an arrow to denote a charged boson.
Draws a sinusoidal line with an arrow pointing the other way to to denote a anti charged boson.
Draws a sinusoidal line to denote a photon.

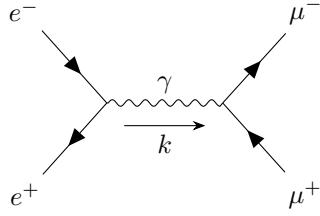


Figure 3: fig:feynmandiagram.3

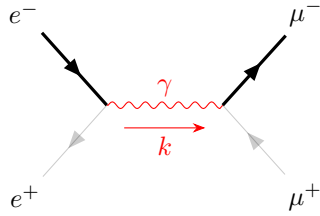


Figure 4: fig:feynmandiagram.4

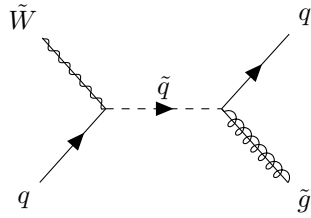


Figure 5: fig:feynmandiagram.5

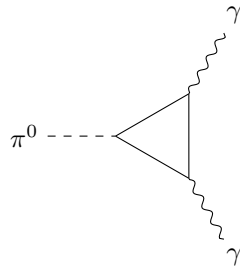


Figure 6: fig:feynmandiagram.6

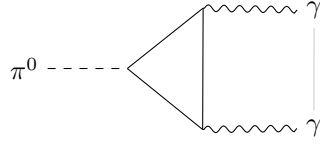


Figure 7: fig:feynmandiagram.7

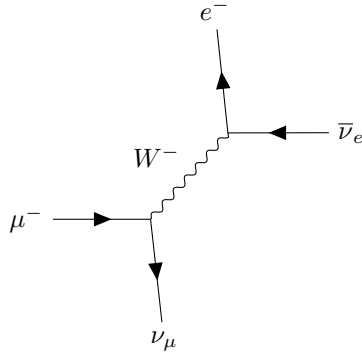


Figure 8: fig:feynmandiagram.8

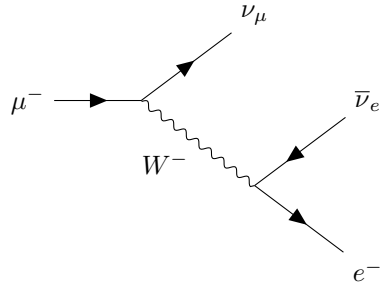


Figure 9: fig:feynmandiagram.9

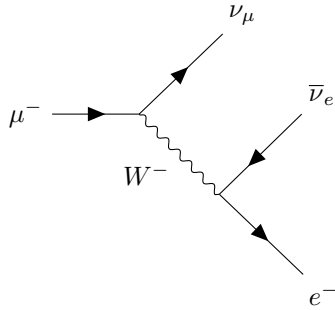


Figure 10: fig:feynmandiagram.11

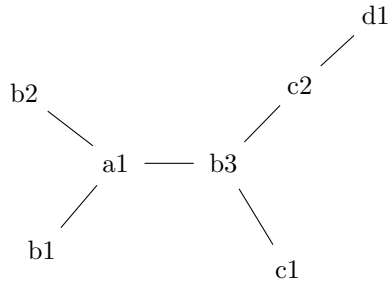


Figure 11: fig:feynmandiagram.12

This is not red

This is red

Figure 12: fig:feynmandiagram.13

$$\gamma \text{ wavy line} \rightarrow \text{vertex} \rightarrow \text{two outgoing lines} = ig_e \gamma^\mu \quad (1)$$

Figure 13: fig:feynmandiagram.14

$$\gamma \text{ wavy line} \rightarrow \text{vertex} \rightarrow \text{two outgoing lines} = ig_e \gamma^\mu \quad (2)$$

Figure 14: fig:feynmandiagram.15

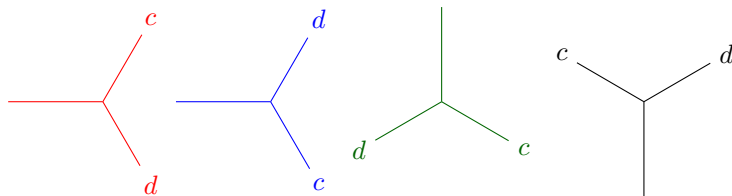


Figure 15: fig:feynmandiagram.16

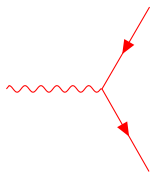


Figure 16: fig:feynmandiagram.17

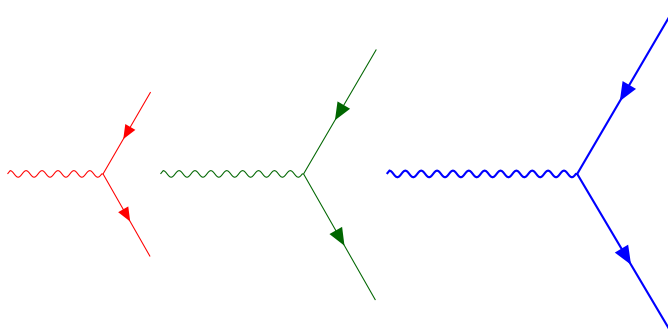


Figure 17: fig:feynmandiagram.18

/graph drawing/spring layout= <string> (no default)

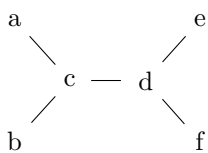


Figure 18: fig:feynmandiagram.19

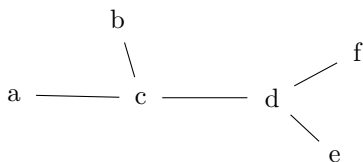


Figure 19: fig:feynmandiagram.20

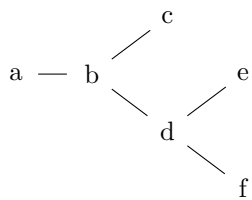


Figure 20: fig:feynmandiagram.21

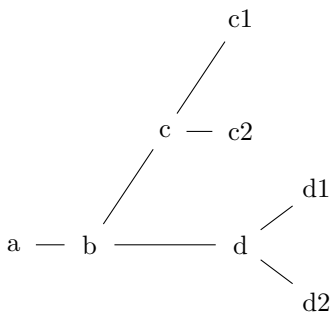


Figure 21: fig:feynmandiagram.22

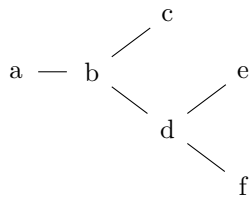


Figure 22: fig:feynmandiagram.23

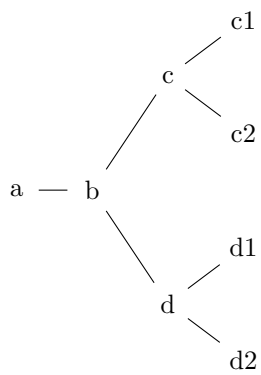


Figure 23: fig:feynmandiagram.24

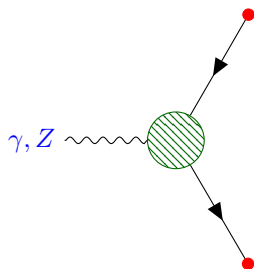


Figure 24: fig:feynmandiagram.25

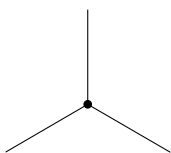


Figure 25: fig:feynmandiagram.26

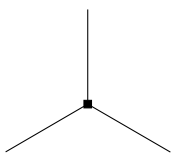


Figure 26: fig:feynmandiagram.27

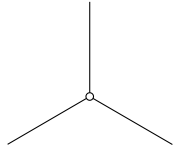


Figure 27: fig:feynmandiagram.28

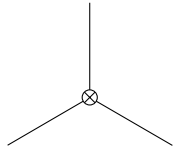


Figure 28: fig:feynmandiagram.29

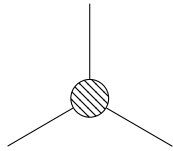


Figure 29: fig:feynmandiagram.30

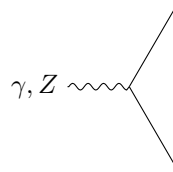


Figure 30: fig:feynmandiagram.31

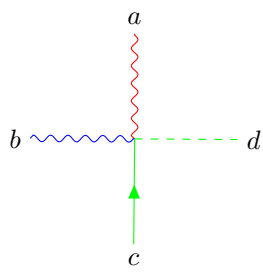


Figure 31: fig:feynmandiagram.32

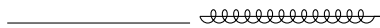


Figure 32: fig:feynmandiagram.33

- Draws a dashed line to denote a scalar.
- Draws a dashed line with an arrow to denote a charged scalar.
- Draws a dashed line with an arrow pointing the other way to denote a charged scalar antiparticle.
- Draws a dotted line to denote a ghost.
- Draws a solid line with an arrow pointing the other way to denote an antifermion.
- Draws a solid line with two arrows pointing to the center to denote an Majorana particle.
- Draws a solid line with two arrows pointing to the ends to denote a Majorana particle.
- Draws a coiled line to denote a gluon.
- Multiple insertions can be placed along a single edge by repeating the style key. Through the ‘<options>’ argument, the insertion size and style can be changed.
- Specifies how big the insertion should be. The length of each edge starting from the center will be $\sqrt{2} \times \langle distance \rangle$.
- Specifies additional styles to applying to the lines of the insertion.

1.1.2 Momentum Keys

1.1.3 Modifier Keys

1.2 Examples-tikz

Below are a few diagrams which demonstrate how the package can be used in some more practical examples.

1.2.1 Vertex Rule

1.3 Tree Level Diagrams

By default, the ‘`feynmandiagram`’ and ‘`diagram`’ commands use the spring layout algorithm to place all the edges.

1.4 Loop

1.5 Box Diagrams

1.6 Meson decay and mixing

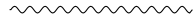


Figure 33: fig:feynmandiagram.34



Figure 34: fig:feynmandiagram.35



Figure 35: fig:feynmandiagram.36



Figure 36: fig:feynmandiagram.37

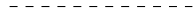


Figure 37: fig:feynmandiagram.38



Figure 38: fig:feynmandiagram.39



Figure 39: fig:feynmandiagram.40



Figure 40: fig:feynmandiagram.41



Figure 41: fig:feynmandiagram.42



Figure 42: fig:feynmandiagram.43



Figure 43: fig:feynmandiagram.44

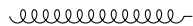


Figure 44: fig:feynmandiagram.45



Figure 45: fig:feynmandiagram.46



Figure 46: fig:feynmandiagram.47



Figure 47: fig:feynmandiagram.48

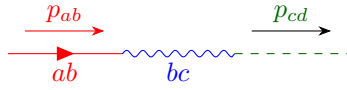


Figure 48: fig:feynmandiagram.49

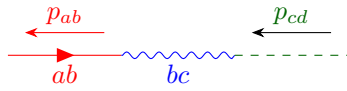


Figure 49: fig:feynmandiagram.50

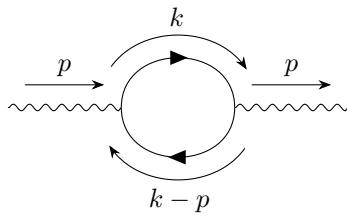


Figure 50: fig:feynmandiagram.51

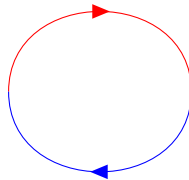


Figure 51: fig:feynmandiagram.52

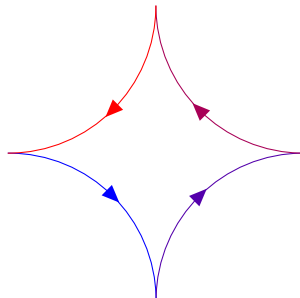


Figure 52: fig:feynmandiagram.53

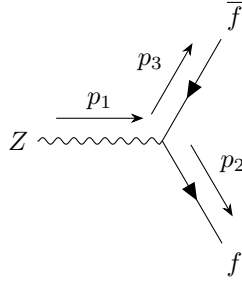


Figure 53: fig:feynmandiagram.54

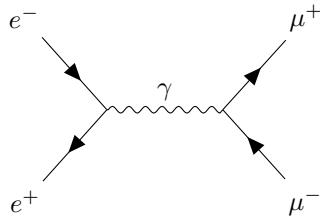


Figure 54: fig:feynmandiagram.55

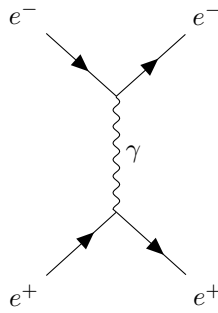


Figure 55: fig:feynmandiagram.56

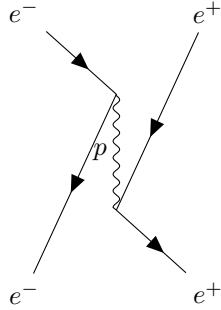


Figure 56: fig:feynmandiagram.57

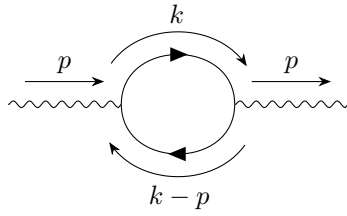


Figure 57: fig:feynmandiagram.58

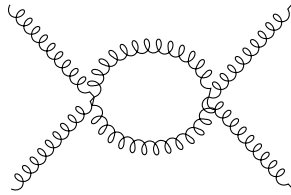


Figure 58: fig:feynmandiagram.59

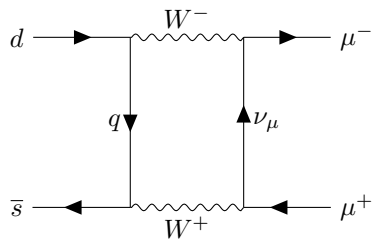


Figure 59: fig:feynmandiagram.60

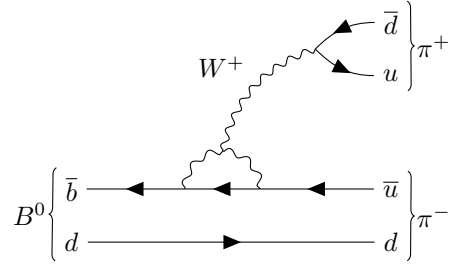


Figure 60: fig:feynmandiagram.61

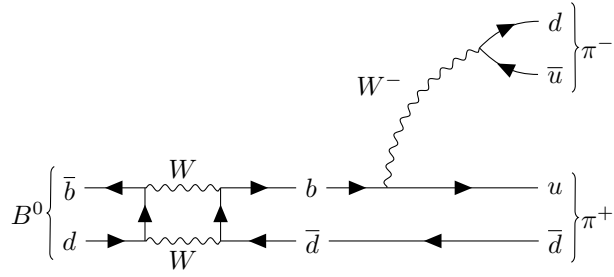


Figure 61: fig:feynmandiagram.62

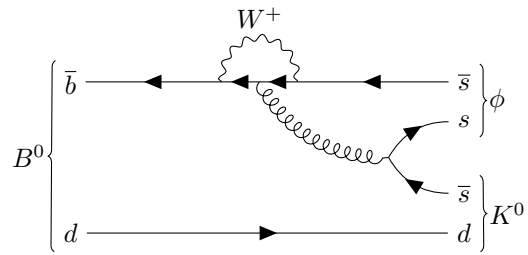


Figure 62: fig:feynmandiagram.63