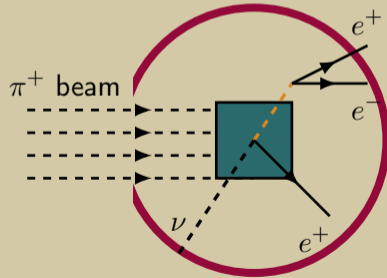
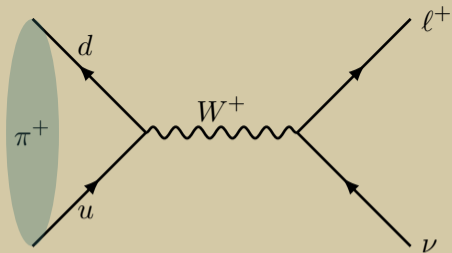


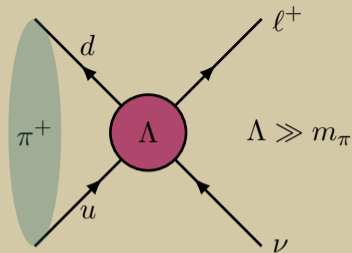
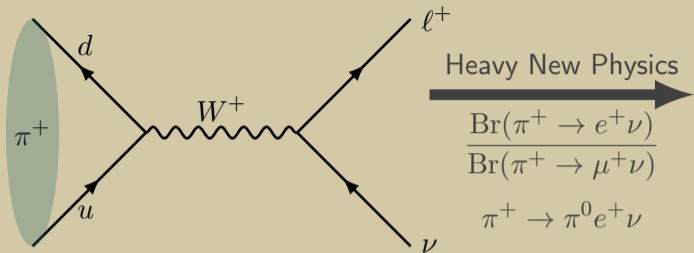
Light New Physics at PIONEER

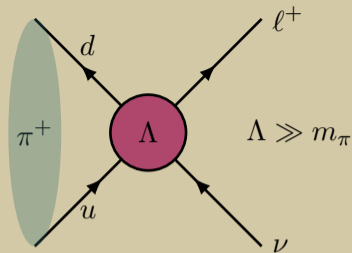
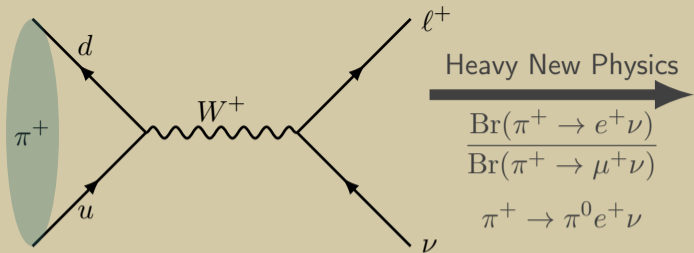
Jeff Dror

UC Santa Cruz → University of Florida

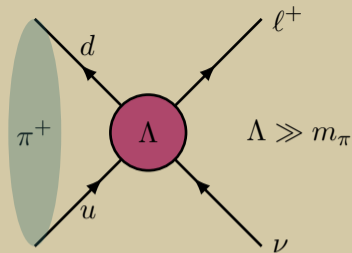
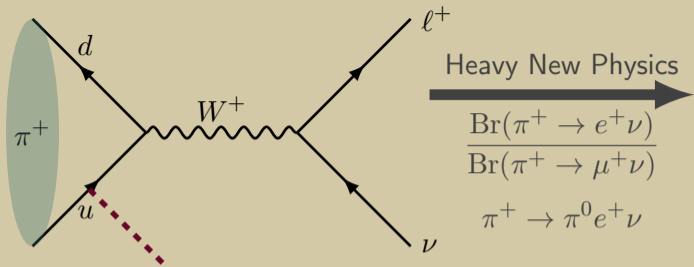








Light
New
Physics



Light
New
Physics



Spin

0

1/2

1

Coupling

u, d

W^+

ℓ^+

ν

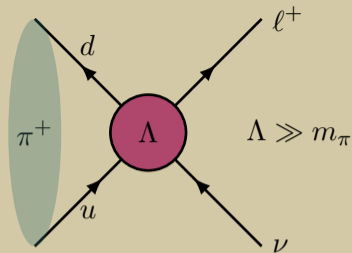
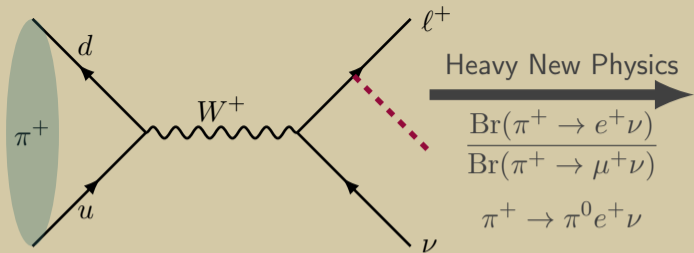
Decay Modes

e^+e^-

$\gamma\gamma$

$\nu\nu$

$e^+e^-\nu$



Light
New
Physics



Spin

0

1/2

1

Coupling

u, d

W^+

ℓ^+

ν

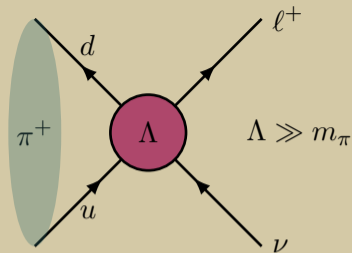
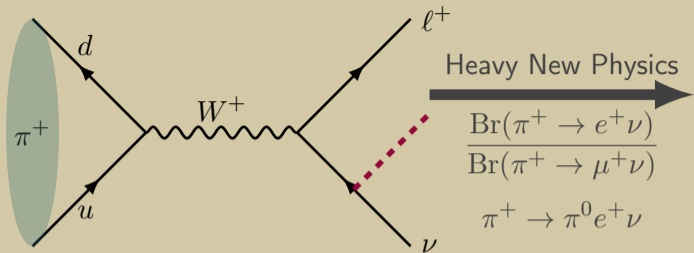
Decay Modes

$e^+ e^-$

$\gamma\gamma$

$\nu\nu$

$e^+ e^- \nu$



Light
New
Physics



Spin

0

1/2

1

Coupling

u, d

W^+

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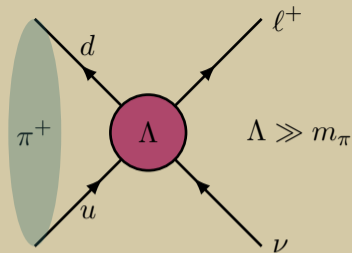
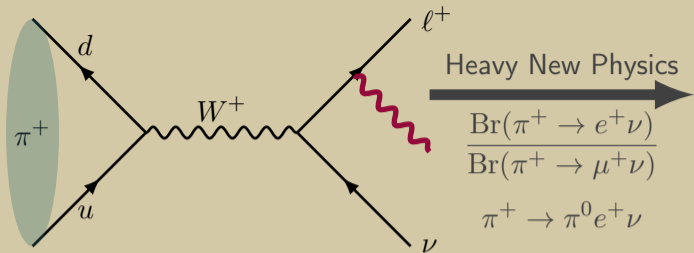
Decay Modes

e^+e^-

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$\nu\nu$

$e^+e^-\nu$



Light
New
Physics



Spin

0

1/2

1

Coupling

u, d

W^+

ℓ^+

ν

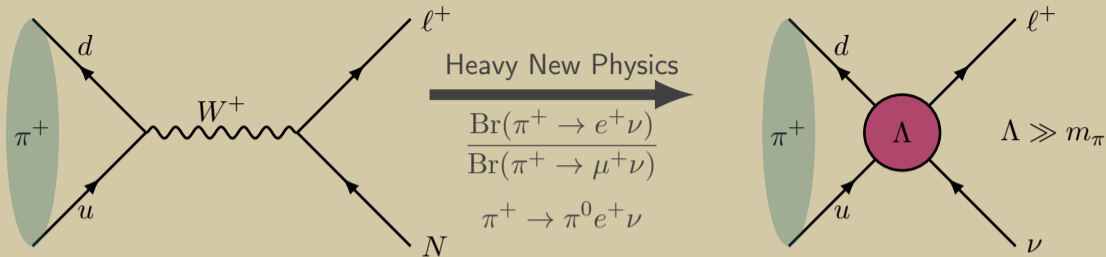
Decay Modes

e^+e^-

$\gamma\gamma$

$\nu\nu$

$e^+e^-\nu$



Light
New
Physics



Spin

0

1/2

1

Coupling

u, d

W^+

ℓ^+

ν

Decay Modes

e^+e^-

$\gamma\gamma$

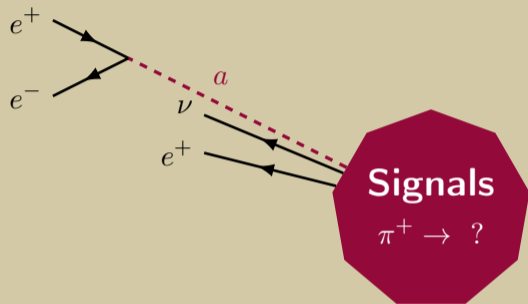
$\nu\nu$

$e^+e^-\nu$

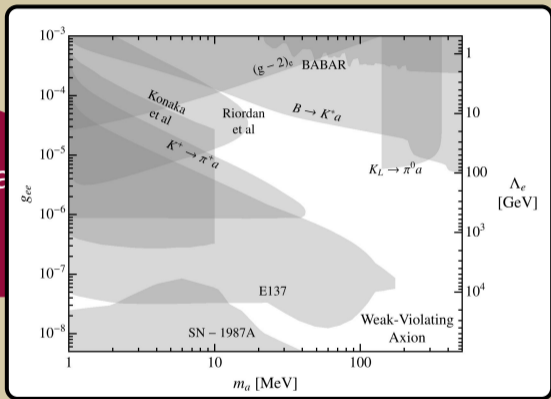
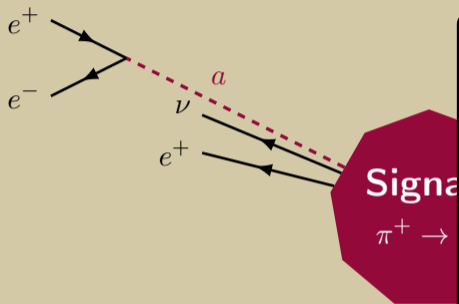
Signals

$\pi^+ \rightarrow ?$

Axion

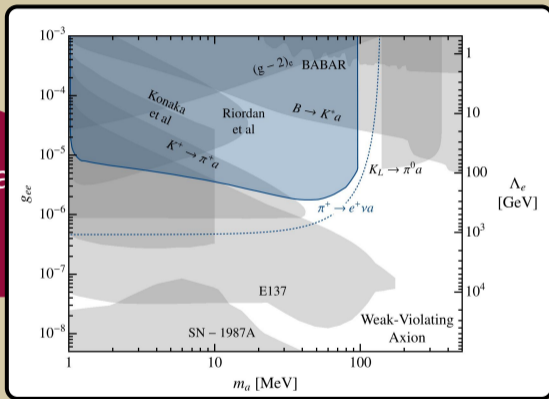
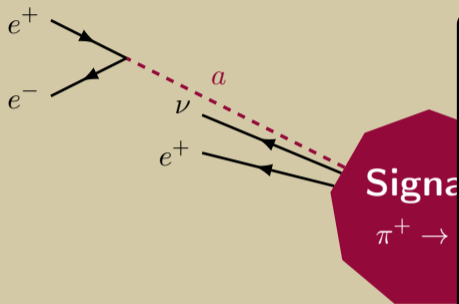


Axion



Altmannshofer, JD, Gori '22

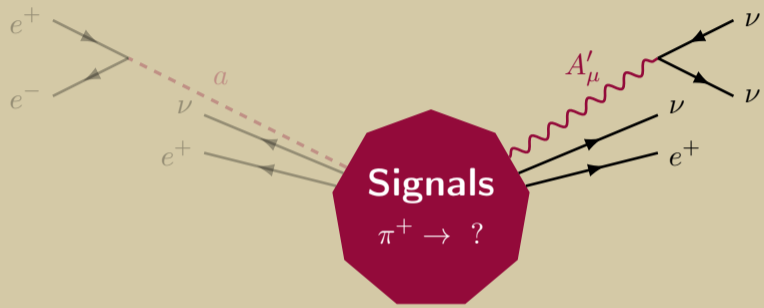
Axion



Altmannshofer, JD, Gori '22

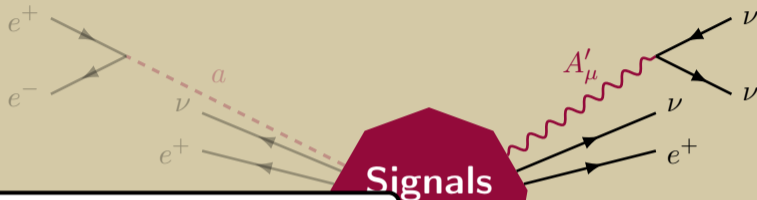
Axion

Gauge boson



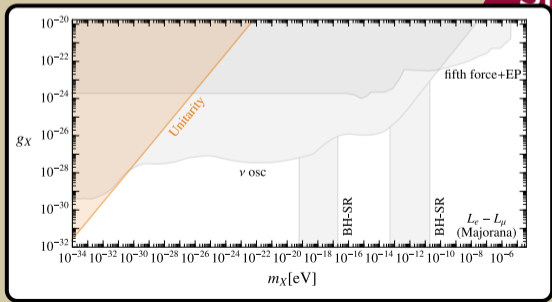
Axion

Gauge boson



Signals

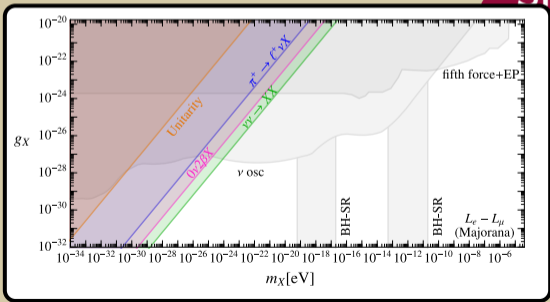
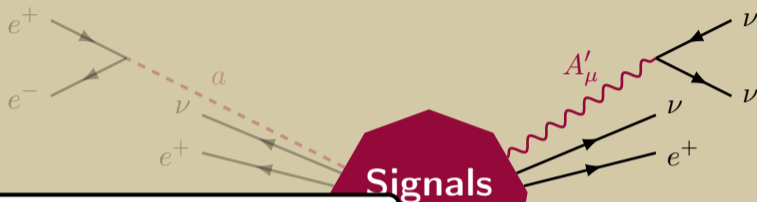
$e^+ \rightarrow ?$



JD '20

Axion

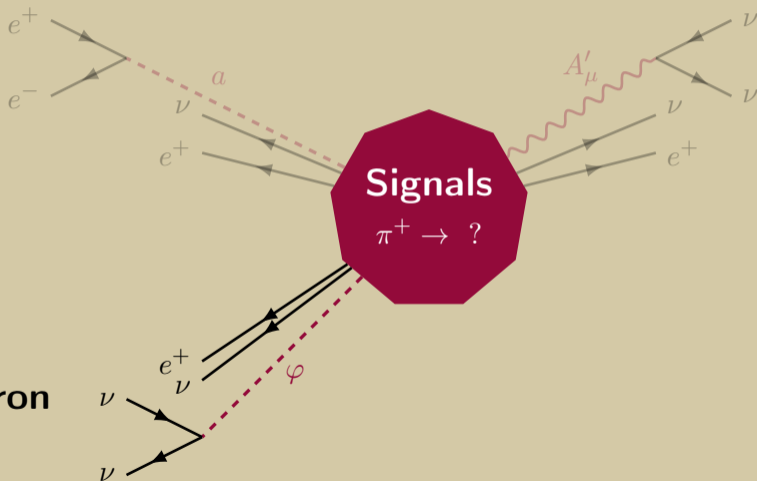
Gauge boson



JD '20

Axion

Gauge boson



Majoron

Sterile neutrinos

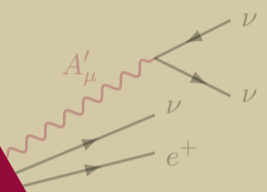
Axion

Gauge boson

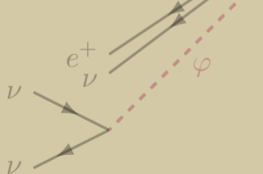


Signals

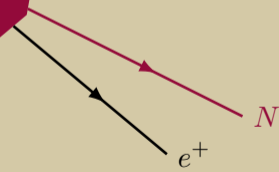
$\pi^+ \rightarrow ?$



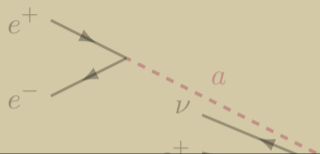
Majoron



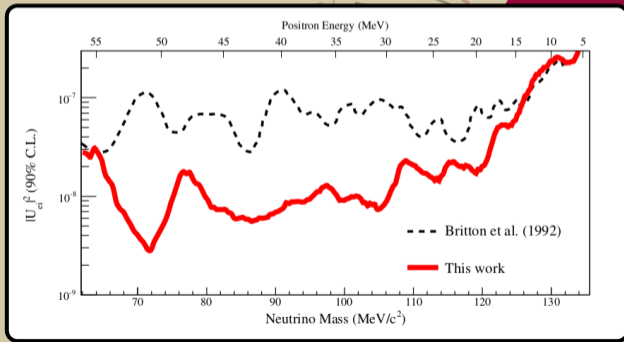
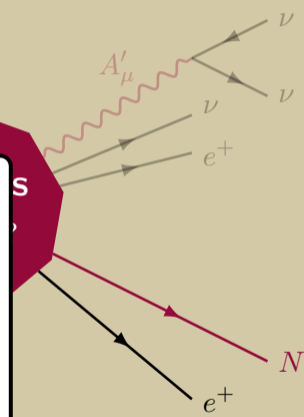
Sterile neutrinos



Axion



Gauge boson



Sterile neutrinos

PIENU '21

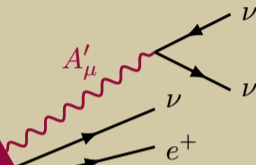
Axion

Gauge boson



Signals

$\pi^+ \rightarrow ?$



Majoron



Sterile neutrinos

N

e^+