

Greek
symbol: ν

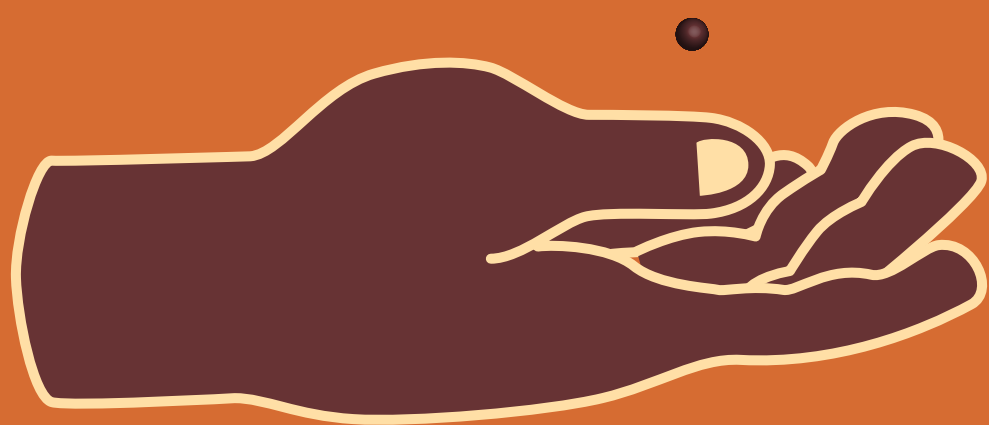
Family: lepton



Trillions of neutrinos
stream through your
hand every second



(but they're so antisocial,
only one might actually
interact with your body
in your whole lifetime).



Neutrinos rarely interact
and feel only two forces:

gravity

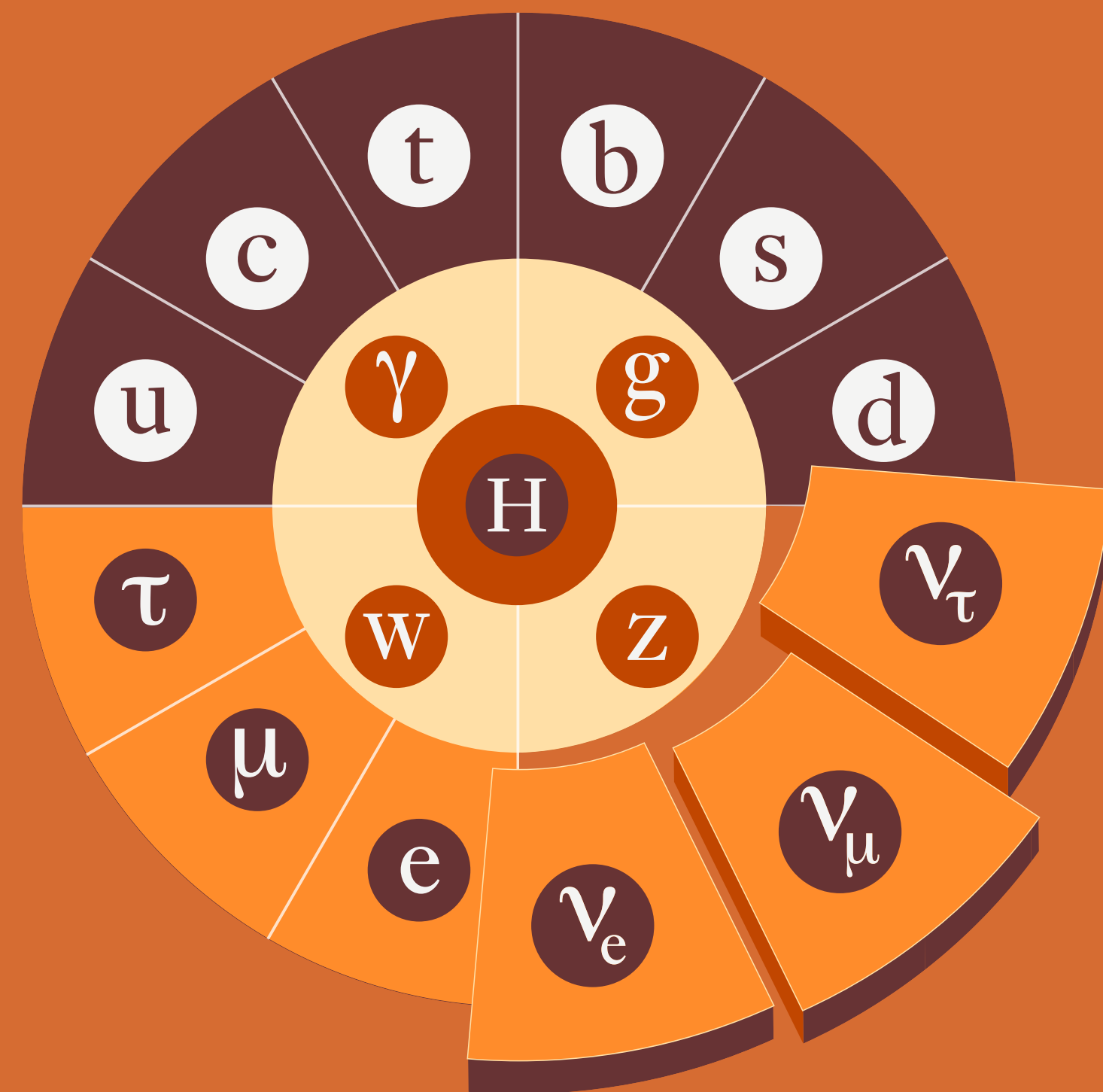
weak force



Antimatter version: antineutrino
Neutrinos might be their own antiparticles!



The Intriguing Neutrino



MASS

UNKNOWN but incredibly small,
more than one million times
smaller than an electron

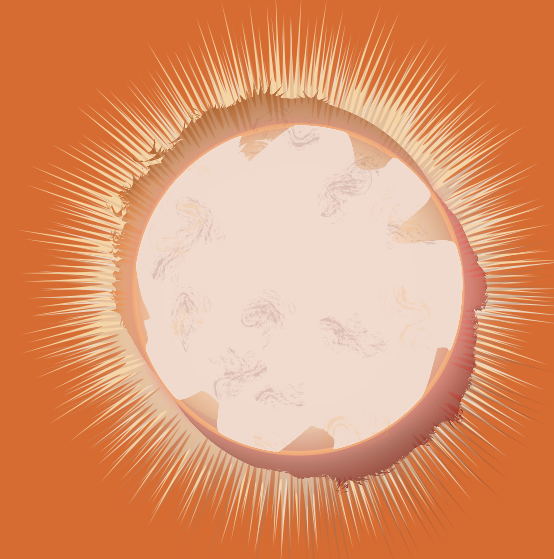


Spin
 $1/2$

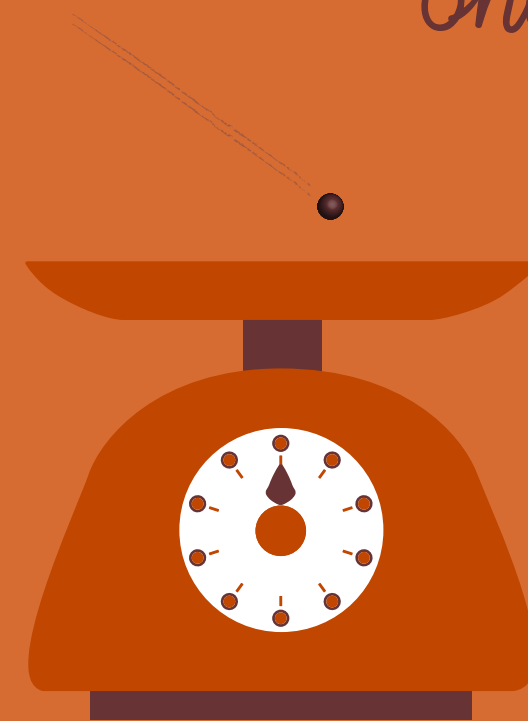


Charge
0

When a star explodes,
99% of the energy is
carried away by neutrinos



~ Name means ~
"little neutral one"



www.fnal.gov

“

**Dear radioactive ones,
scrutinize and judge.**

– Wolfgang Pauli, in his letter proposing
the neutrino, a “desperate remedy”
he worried physicists could never detect

”



Neutrinos are
left-handed and
antineutrinos are
right-handed



3 TYPES



1956



Discovered:

1962



2000

Neutrinos oscillate,
or change type, as they travel