

♪ THE POLE, THE POLE,
THE POLE IS ON FIRE.
FOLLOW THE ALERT, ALERT, ALERT,
FOLLOW THE ALERT...

RIGHT, LEFT, RIGHT, LEFT,
EVERYBODY,
RIGHT, LEFT, RIGHT LEFT...

SING WITH ME!

THIS NEUTRINO
STARTED IT ALL!

WHAT'S SO SPECIAL
ABOUT THIS ONE?

WELL, IT'S A VERY HIGH
ENERGY ONE. AND IT
POINTED TO A PARTICULAR
SPOT IN THE SKY.

GIBBS, HOW LUCKY ARE WE!
LOST AT THE SOUTH POLE, BUT
WE MADE IT TO THE PARTY OF
THE CENTURY!

I KNOW! AND A SOURCE
OF NEUTRINOS ALSO MEANS THE
FIRST SOURCE OF COSMIC RAYS.
ICECUBERS HAVE HIT IT BIG!

SO, THIS IS
WHAT'S BEHIND
ALL THE FUSS?

YES, A BLAZAR.
ONE LIKE THIS PRODUCED THE
NEUTRINOS WE DETECTED.

ISN'T A BLAZAR A BLACK
HOLE SPITTING OUT
JETS OF PARTICLES?

PRETTY MUCH. BLAZARS ARE
EXTREMELY POWERFUL, AND
ONE OF THEIR JETS POINTS
TOWARD US.

THAT'S SO COOL!
ICECUBE TRIGGERED OBSERVATIONS
FROM 20 OTHER TELESCOPES.

YES, ALL POINTING TO A
SUPERMASSIVE BLACK
HOLE VERY FAR AWAY
IN THE UNIVERSE!

NOT ONLY THAT!
MANY OF THEM SAW
THE SAME SOURCE.

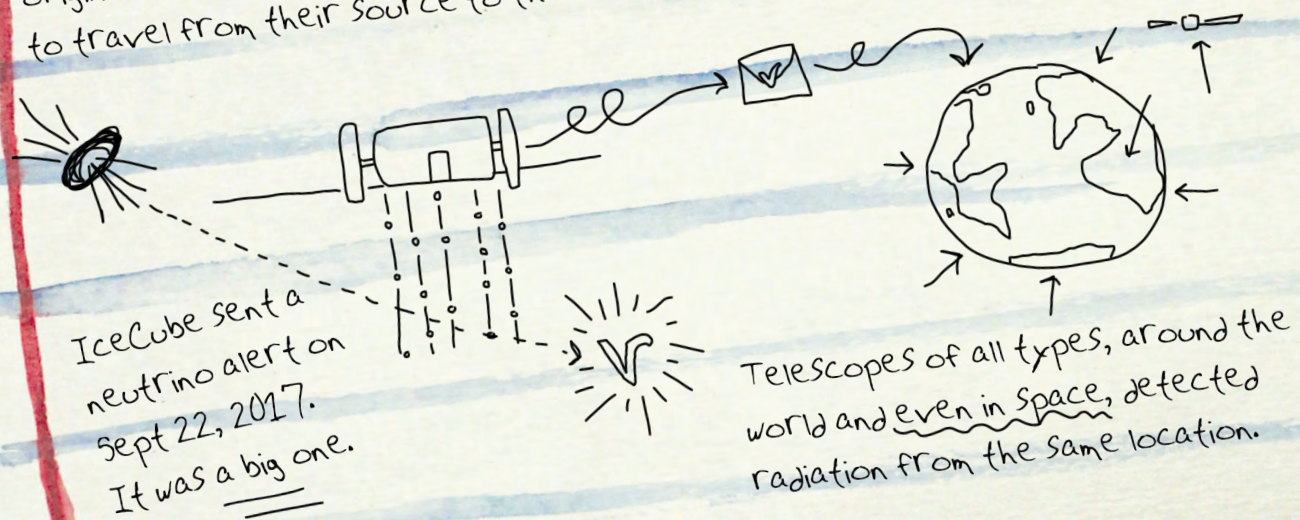
THE PENGUINS ROSIE AND GIBBS MADE A LONG TRIP FROM ANTARCTICA'S COAST TO THE SOUTH POLE LOOKING FOR ADVENTURES. AND GUESS WHAT... THEY WERE RIGHT ON TIME TO CELEBRATE THE MOST IMPORTANT RESULTS TO DATE FOR THE ICECUBE NEUTRINO OBSERVATORY. UP NORTH, THE ASTROPHYSICS COMMUNITY WAS CELEBRATING A NEW BREAKTHROUGH IN MULTIMESSENGER ASTRONOMY. AND THE SOUTH POLE WINTER CREW DECIDED TO JOIN THE PARTY!

Rosie's Discoveries

A multimessenger astronomy discovery (or is it a neutrino discovery?)

This was such a fun day that I am not sure where to start!

Here is what happened. We have found that a supermassive black hole is the origin of some neutrinos detected by IceCube. It took them about 4 billion years to travel from their source to the South Pole. It's mind-blowing!



It turns out that we knew this source! It's a blazar, or a black hole spitting out high-energy jets of particles along its axis. We had never seen neutrinos from a specific source before. Was this first neutrino the only one? No, IceCubers found over a dozen more neutrinos from using that alert as a pointer. And here we are! Learning more about the discovery with IceCube's winterovers!

Is this neutrino astronomy? Or is this multimessenger astronomy? I'd say it's both! And it may happen again soon! I need to talk to Gibbs. I'm not going back home to Antarctica's coast until the next exciting neutrino shows up.

ADVENTURES WITH ROSIE & GIBBS

the lost penguins



ADVENTURE 3: AN EXCITING DISCOVERY

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