

STAR GAZERS

SG 1603 – 5 MINUTE (JANUARY 18-24, 2015)

“SUPERMARKET SOLAR SYSTEM!”

DEAN: WELCOME TO STAR GAZERS! I'M DEAN REGAS, ASTRONOMER FROM THE CINCINNATI OBSERVATORY.

JAMES: AND I'M JAMES ALBURY, DIRECTOR OF THE KIKA SILVA PLA PLANETARIUM IN GAINESVILLE, FLORIDA. THIS WEEK, WE'RE GOING TO HELP YOU PUT THE SOLAR SYSTEM IN PERSPECTIVE.

DEAN: THAT'S RIGHT, JAMES. OUR SOLAR SYSTEM IS SO LARGE WITH RESPECT TO THE SIZE OF THE PLANETS, THAT MOST PEOPLE, OURSELVES INCLUDED, HAVE NEVER REALLY HAD A CLEAR CONCEPT OF THE SCALE OF THE UNIVERSE.

JAMES: TO SAY THAT SPACE IS BIG IS AN UNDERSTATEMENT. HOW OFTEN DO WE THINK THAT THOSE BEAUTIFUL SPARKLING POINTS OF LIGHT IN THE SKY ARE ACTUALLY SUNS LIKE OUR SUN, YET THEY'RE SO FAR AWAY THAT THEY APPEAR AS MERE POINTS OF LIGHT?

DEAN: AND HOW OFTEN DO WE THINK OF THE DIFFERENCES IN SIZES BETWEEN THE VARIOUS PLANETS AS THEY DRIFT ACROSS OUR EVENING AND MORNING SKIES?

JAMES: EVEN WITH ALL THE EASY ACCESS WE HAVE TO INFORMATION ABOUT THE UNIVERSE, MANY OF US STILL DON'T REALLY RELATE TO THE SIZE AND DISTANCE OF THINGS WHEN IT COMES TO THE NIGHT SKY.

DEAN: SO, WE HAVE A NEAT DEMONSTRATION THAT CAN HELP, AND YOU CAN DO IT AT HOME, USING EVERY DAY OBJECTS YOU CAN FIND IN YOUR KITCHEN.

JAMES: OR, THE NEXT TIME YOU'RE IN THE SUPERMARKET, PICK UP A FEW OF THESE ITEMS AND YOU CAN MAKE A MINIATURE SOLAR SYSTEM TO SCALE. LET'S SHOW YOU!

(STOP)

DEAN: OK, LET'S FIRST TALK ABOUT JUPITER, EARTH AND OUR SUN. JUPITER IS OUR LARGEST PLANET, BUT WHAT DOES THAT REALLY MEAN? WE CAN EASILY LOOK UP THE FACT THAT WE COULD FIT 1300 EARTHS INSIDE JUPITER, OR IT WOULD TAKE 1.3 MILLION EARTHS TO FILL UP OUR SUN.

JAMES: OR TAKE THEIR DISTANCES FOR EXAMPLE. IF YOU DROVE IN A CAR FROM THE SUN TO THE EARTH AT 70 MILES PER HOUR, IT WOULD TAKE YOU ALMOST 150 YEARS TO MAKE THE TRIP. FURTHERMORE, IT WOULD TAKE YOU ALMOST 800 YEARS TO DRIVE FROM THE SUN TO JUPITER AND ALMOST 6000 YEARS TO DRIVE FROM THE SUN TO PLUTO.

DEAN: BUT NUMBERS ARE EASILY FORGOTTEN, SO IF YOU REALLY WANT TO RELATE TO THE COSMOS, IT'S BEST TO THINK OF IT IN EVERY DAY TERMS AND WHAT COULD BE MORE EVERY DAY THAN YOUR KITCHEN.

JAMES: SO, THE NEXT TIME YOU PICK UP AN ORANGE, PRETEND THAT IT'S THE SUN. THEN, TAKE A SALT SHAKER AND SPRINKLE SOME SALT IN YOUR HAND. IF YOU CAN PICK UP JUST ONE OF THOSE GRAINS OF SALT, THAT WILL REPRESENT THE EARTH, CIRCLING THE ORANGE AT 30 FEET AWAY.

DEAN: NOW TAKE A BLACK BEAN. THIS LITTLE BLACK BEAN REPRESENTS THE PLANET JUPITER, CIRCLING 200 FEET AWAY, OR ONE CITY BLOCK AWAY FROM THE ORANGE.

JAMES: THE PLANET SATURN, WOULD BE ANOTHER BLACK BEAN, TWO CITY BLOCKS AWAY (OR 400 FEET FROM THE ORANGE).

DEAN: PLUTO, EVERYONE'S FAVORITE DWARF PLANET, WOULD BE ONE SPECK OF FINELY GROUND PEPPER, 10 CITY BLOCKS FROM THE ORANGE.

(STOP)

JAMES: BUT OUR SUN IS JUST ONE OF BILLIONS OF STARS IN A FAMILY WE CALL OUR GALAXY. ON THIS SAME SCALE, THE SUN'S CLOSEST NEIGHBOR, ALPHA CENTAURI, IS ANOTHER ORANGE, 1300 MILES AWAY!

DEAN: AND ALL THE OTHER STARS ARE FRUITS OF DIFFERENT SIZES AND ON THE AVERAGE ARE 2000 MILES APART. SO OUR GALAXY, FROM OUR COSMIC KITCHEN, CONSISTS OF OVER 100 BILLION ORANGES, GRAPEFRUITS, CANTALOUPE AND PUMPKINS, OCCUPYING A SPACE 20 MILLION MILES IN DIAMETER. AND THAT'S JUST ONE GALAXY!

JAMES: BUT, TO SHOW THE NUMBER OF STARS IN ALL THE GALAXIES IN THE VISIBLE UNIVERSE, IT WOULD TAKE MORE ORANGES, GRAPEFRUITS, MELONS AND PUMPKINS THAN HAVE EVER GROWN SINCE THE BEGINNING OF TIME!

DEAN: AND REMEMBER, OUR SUN IS JUST ONE OF THOSE ORANGES, WITH ITS 8 MAJOR PLANETS AND 5 DWARF PLANETS, ALL MERE SPECKS OF SALT, PEPPER AND BLACK BEANS, CIRCLING LESS THAN 15 CITY BLOCKS AWAY.

(STOP)

JAMES: OR THINK OF IT LIKE THIS THE NEXT TIME YOU'RE IN YOUR KITCHEN. IF WE COULD FIT OUR ENTIRE SOLAR SYSTEM, OUR SUN AND ALL ITS PLANETS, INCLUDING THE DISTANCES BETWEEN THEM, INSIDE A COFFEE CUP, OUR GALAXY WOULD BE THE SIZE OF NORTH AMERICA!

DEAN: NOW THAT'S A CUP OF JOE THAT'LL REALLY WAKE YOU UP IN THE MORNING AS YOU...

BOTH: KEEP LOOKING UP!