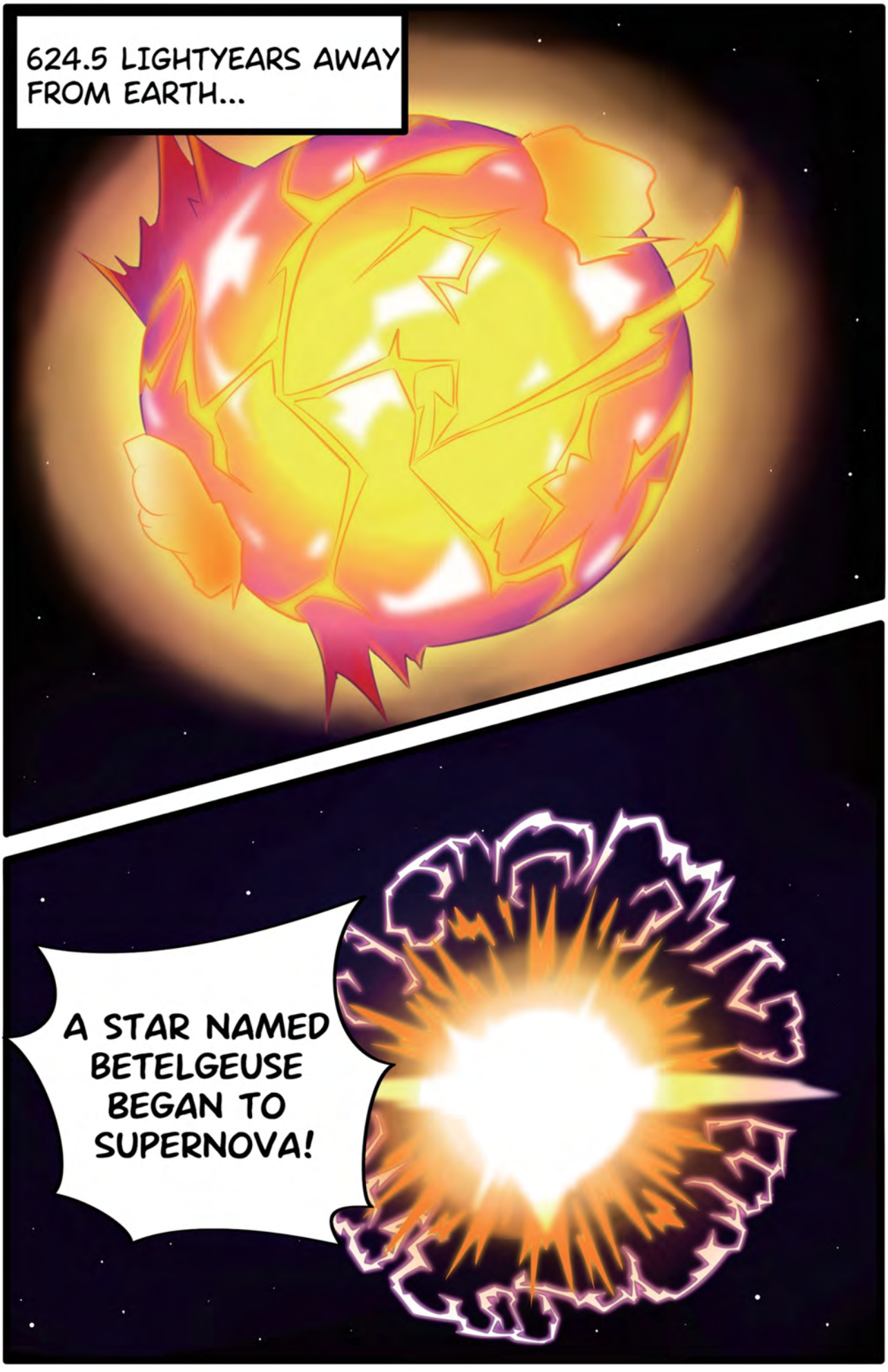
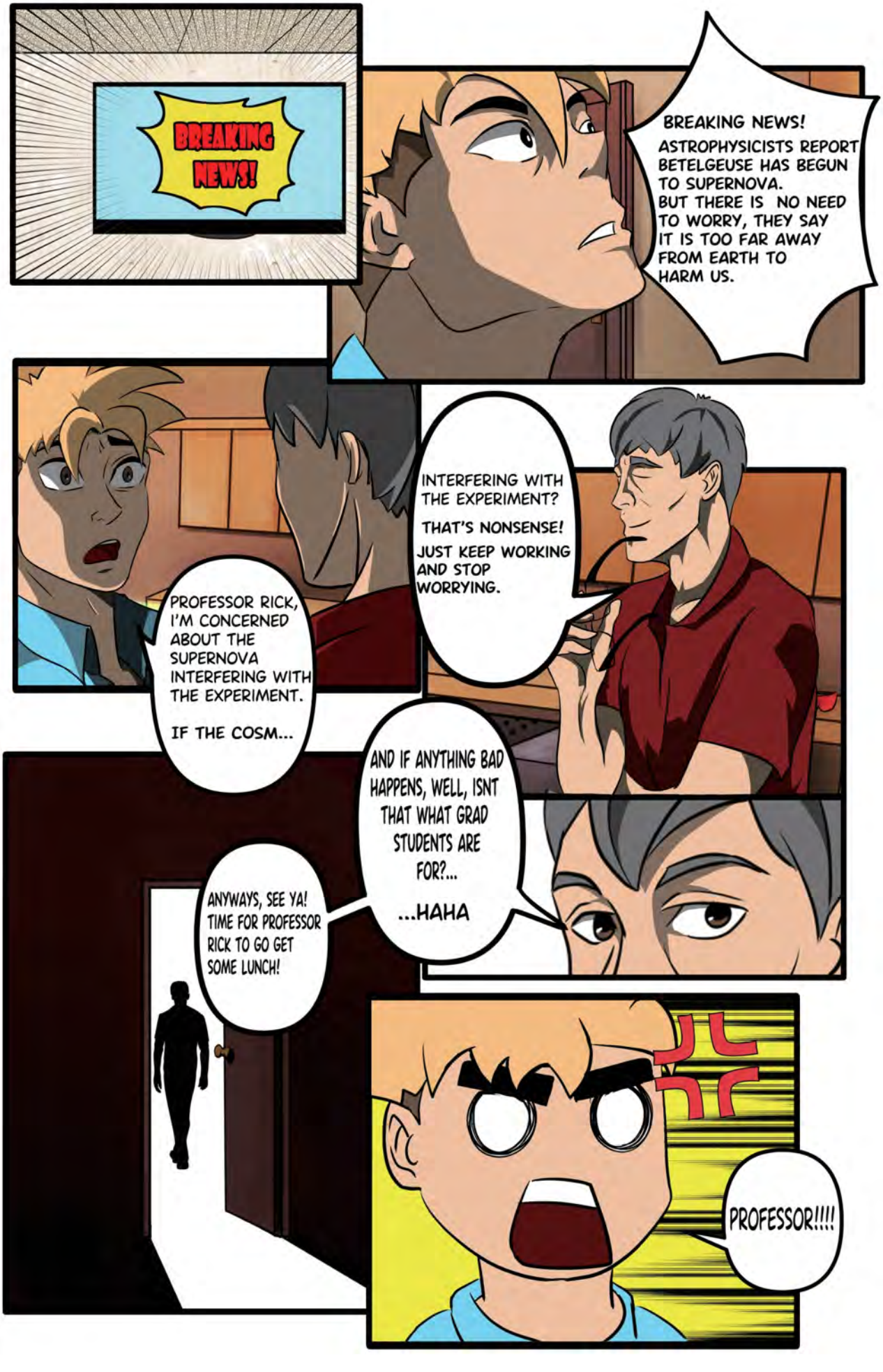
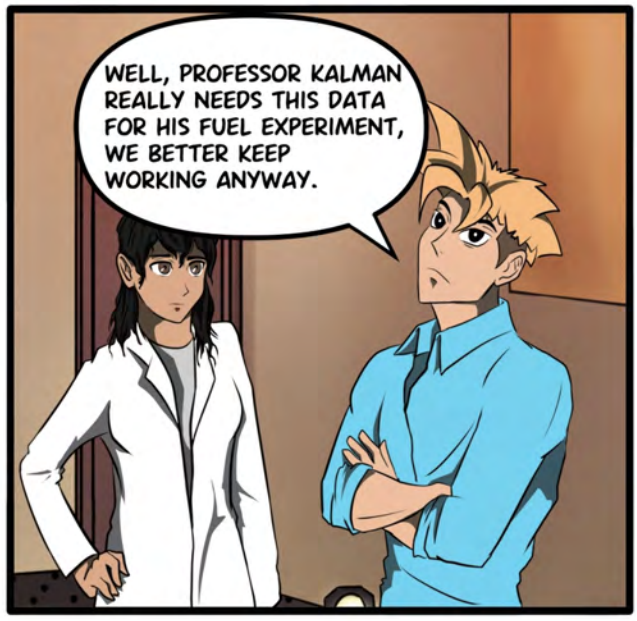
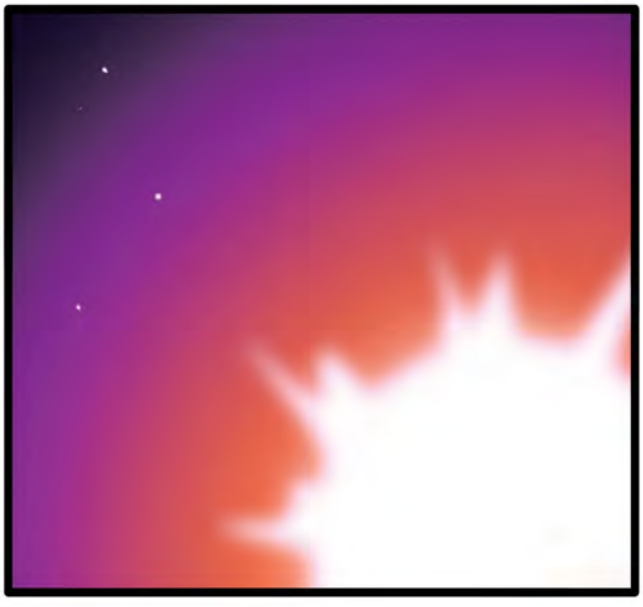
OPTOSIGMA COMICS
PROJECT AVATAR
$n_1 \sin\theta_1 = n_2 \sin$
$NA = n \sin \alpha$
MIR PLAN APO
50X
VOL. 1 - RISE OF THE OPTOTRONS
2ND EDITION - PHOTONICS WEST 2023

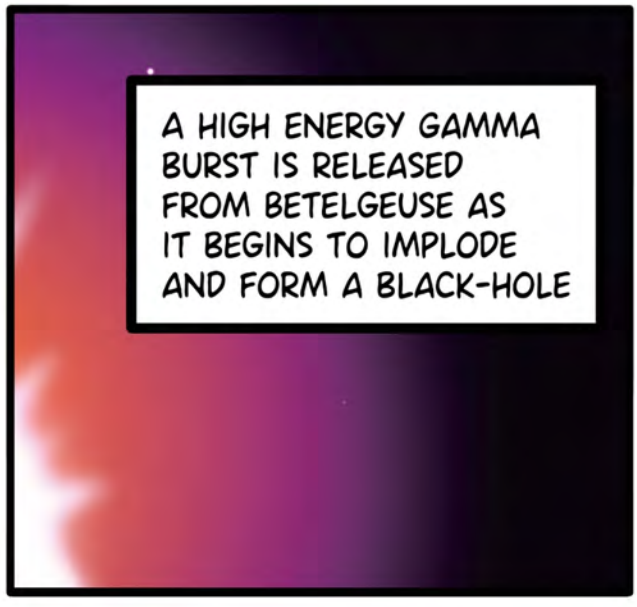

624.5 LIGHTYEARS AWAY FROM EARTH...
A STAR NAMED BETELGEUSE BEGAN TO SUPERNOVA!

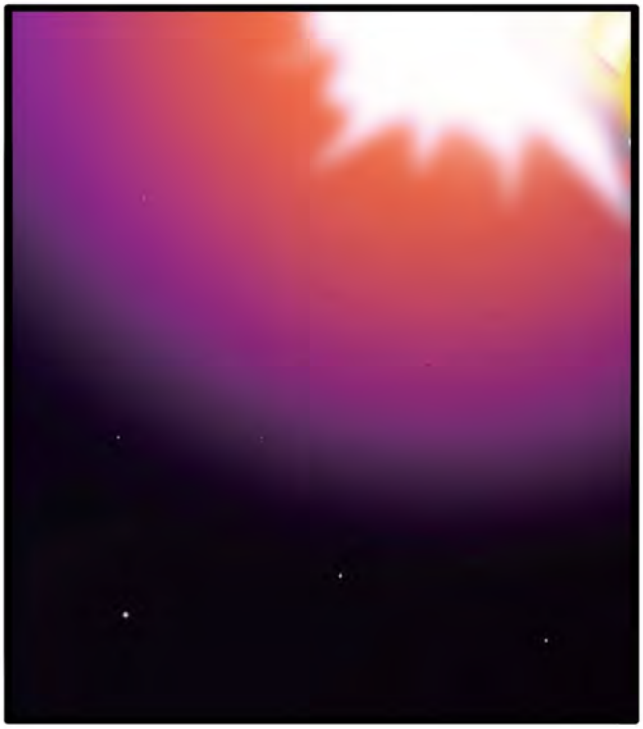

BREAKING NEWS!
BREAKING NEWS!
ASTROPHYSICISTS REPORT BETELGEUSE HAS BEGUN TO SUPERNOVA.
BUT THERE IS NO NEED TO WORRY, THEY SAY IT IS TOO FAR AWAY FROM EARTH TO HARM US.
PROFESSOR RICK, I'M CONCERNED ABOUT THE SUPERNOVA INTERFERING WITH THE EXPERIMENT.
IF THE COSM...
INTERFERING WITH THE EXPERIMENT?
THAT'S NONSENSE!
JUST KEEP WORKING AND STOP WORRYING.
AND IF ANYTHING BAD HAPPENS, WELL, ISNT THAT WHAT GRAD STUDENTS ARE FOR?...
...HAHA
ANYWAYS, SEE YA! TIME FOR PROFESSOR RICK TO GO GET SOME LUNCH!
PROFESSOR!!!!

WOW, THANKS FOR THE REASSURING WORDS, PROFESSOR...


WELL, PROFESSOR KALMAN REALLY NEEDS THIS DATA FOR HIS FUEL EXPERIMENT, WE BETTER KEEP WORKING ANYWAY.

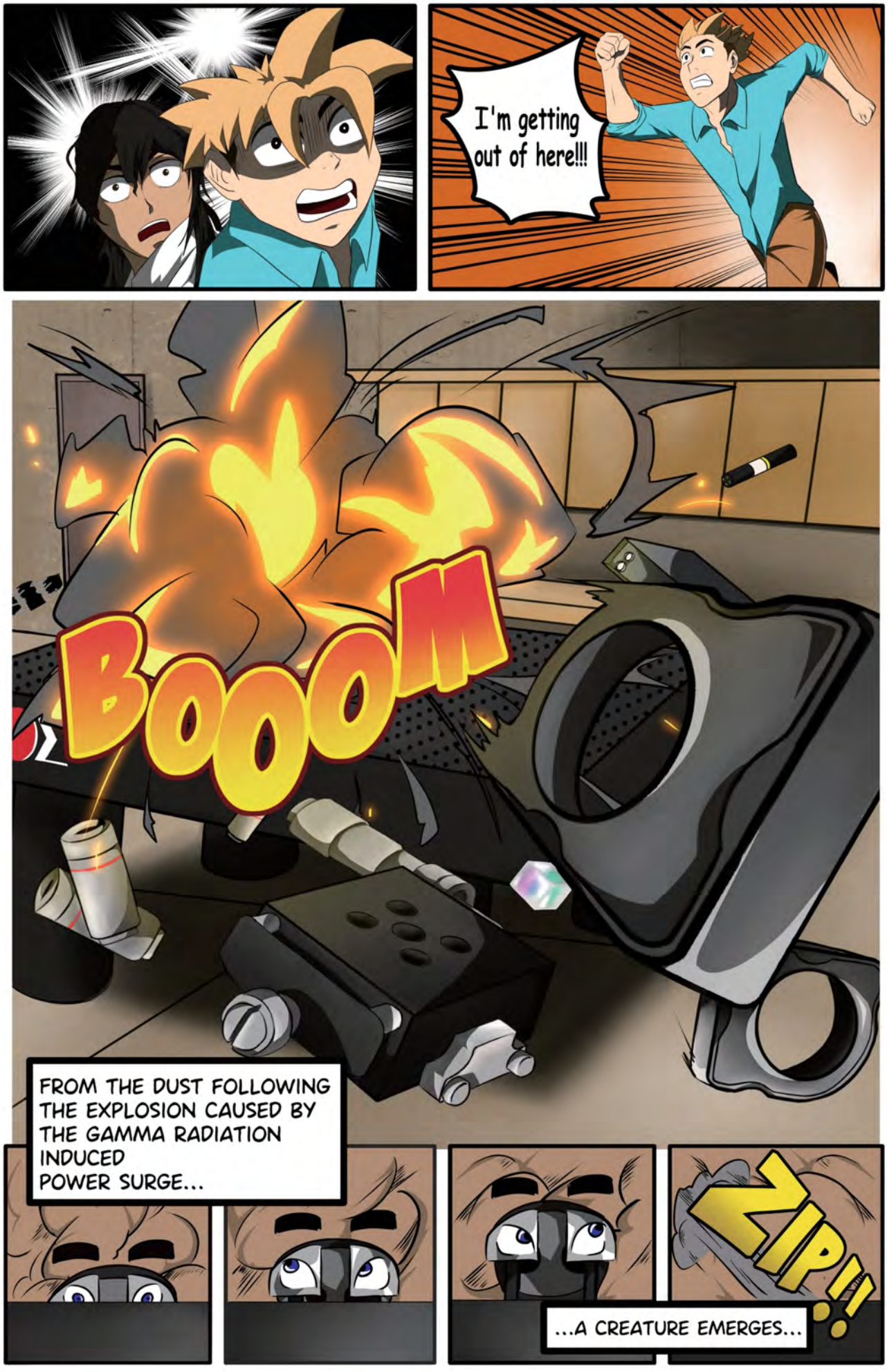


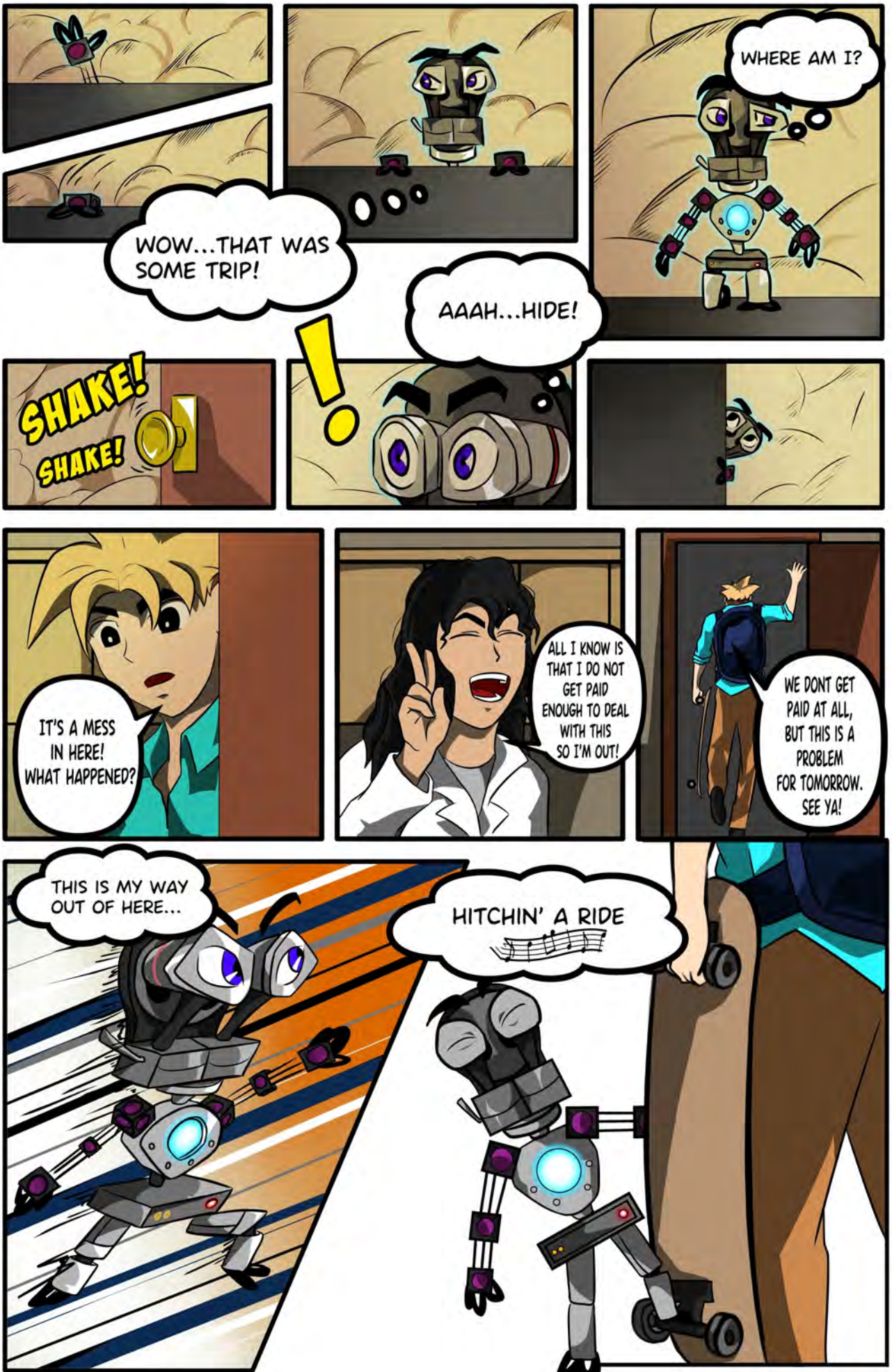

A HIGH ENERGY GAMMA BURST IS RELEASED FROM BETELGEUSE AS IT BEGINS TO IMPLODE AND FORM A BLACK-HOLE

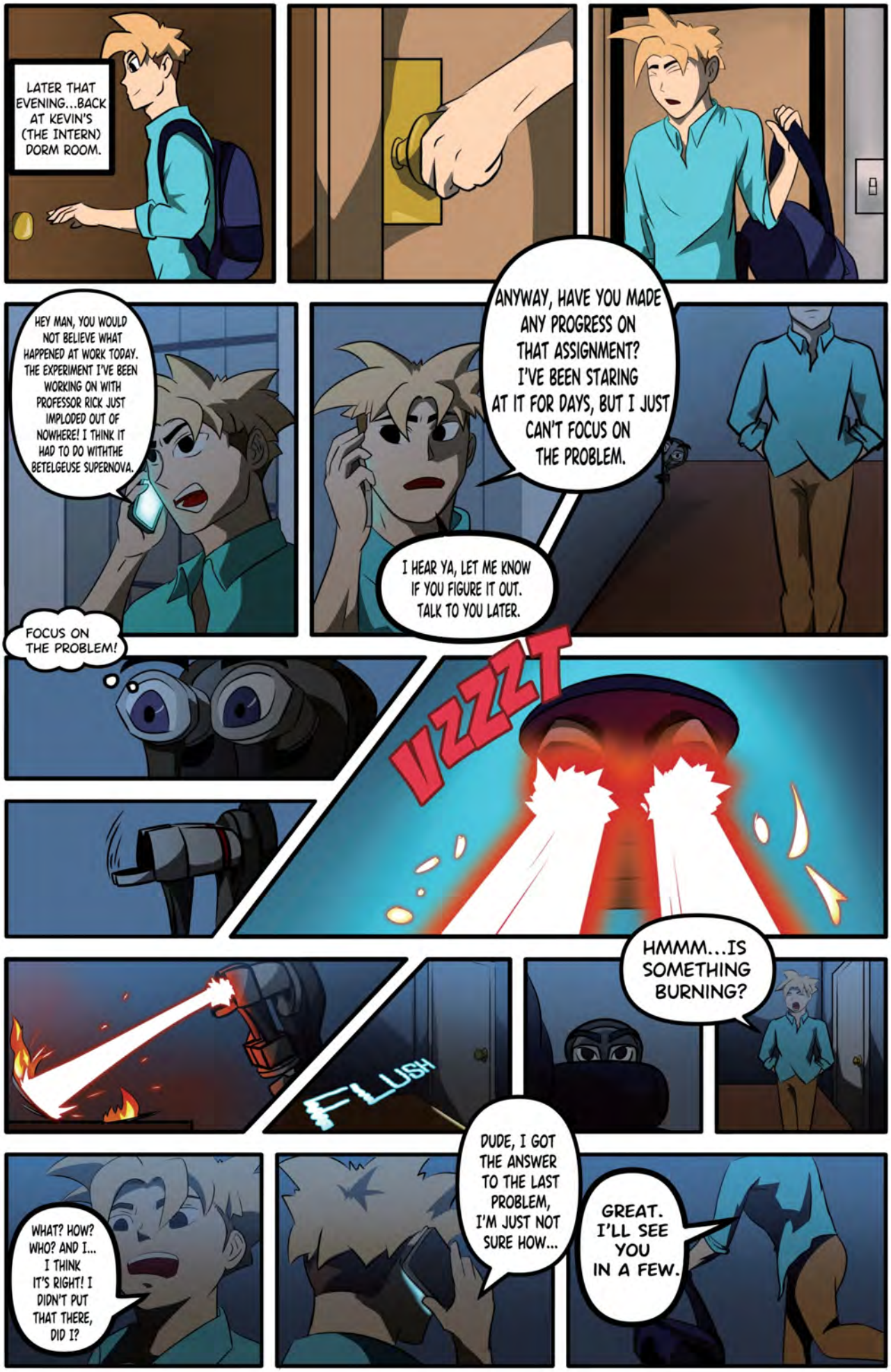


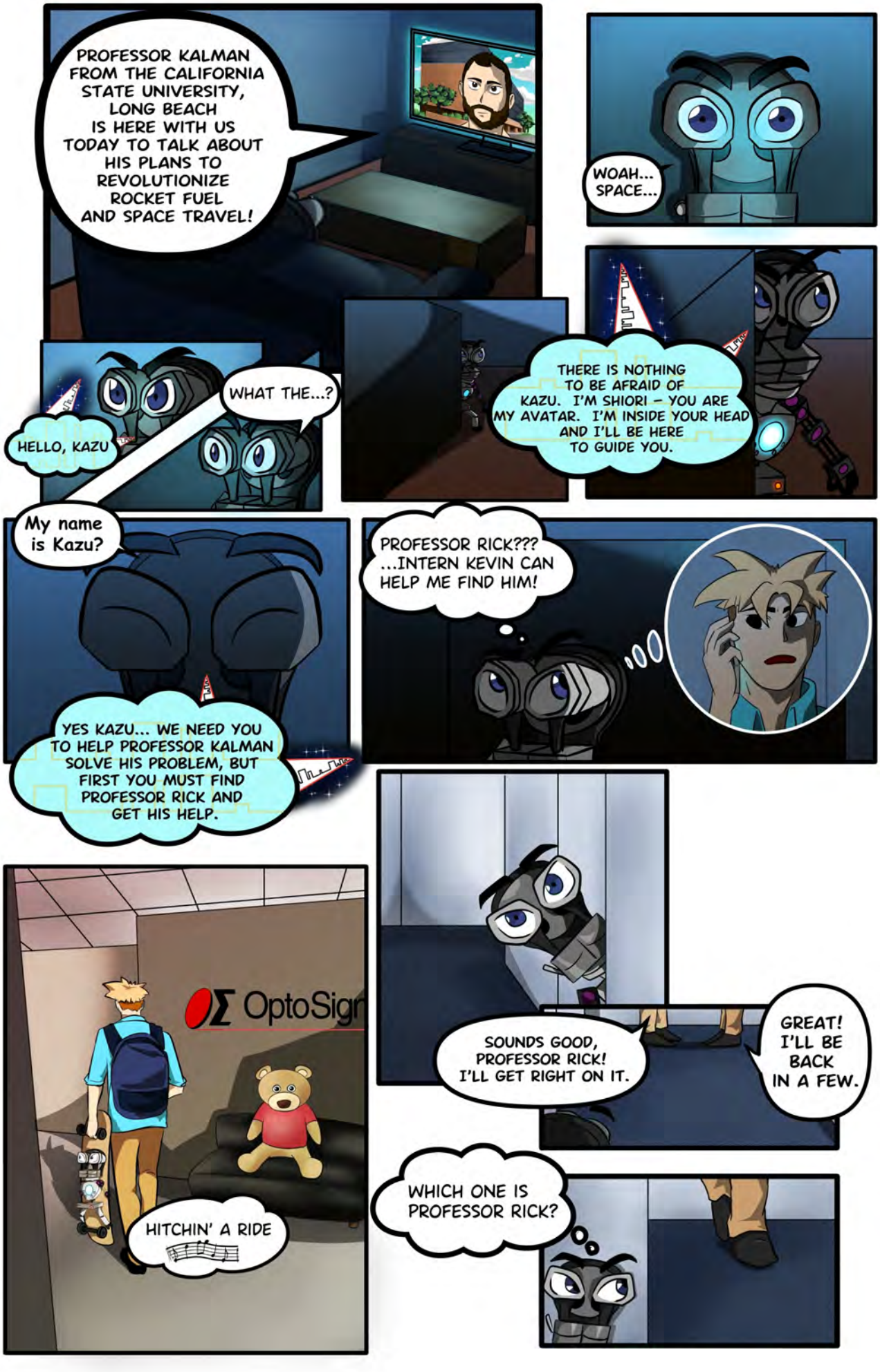
THIS JUST IN...
A BLACK HOLE APPEARS TO BE FORMING FROM THE REMNANTS OF BETELGEUSE. A HIGH ENERGY BEAM OF RADIATION HAS BEEN RELEASED AND IS TRAVELING THROUGH SPACE. NO NEED TO PANIC THOUGH...
THOSE TALKING HEADS REALLY HAVE NO IDEA WHAT THEY'RE SAYING...
TRUE, BUT I'M STILL NERVOUS NONETHELESS.
THE GAMMA BURST GLANCES OFF OF THE HST
...AND HEADS TOWARD EARTH...
DIRECTLY TOWARDS THE OPTOSIGMA FACILITY IN SANTA ANA, CALIFORNIA.
3210
OptoSigma

OK, LASER IS ON... NOW WE JUST NEED TO ALIGN THE SAMPLE CELL AND THE SENSOR.
HEY KAIA, DO YOU FEEL THAT RUMBLING?
RUMBLING


I'm getting out of here!!!
BOOOM
FROM THE DUST FOLLOWING THE EXPLOSION CAUSED BY THE GAMMA RADIATION INDUCED POWER SURGE...
...A CREATURE EMERGES...
ZIP!!

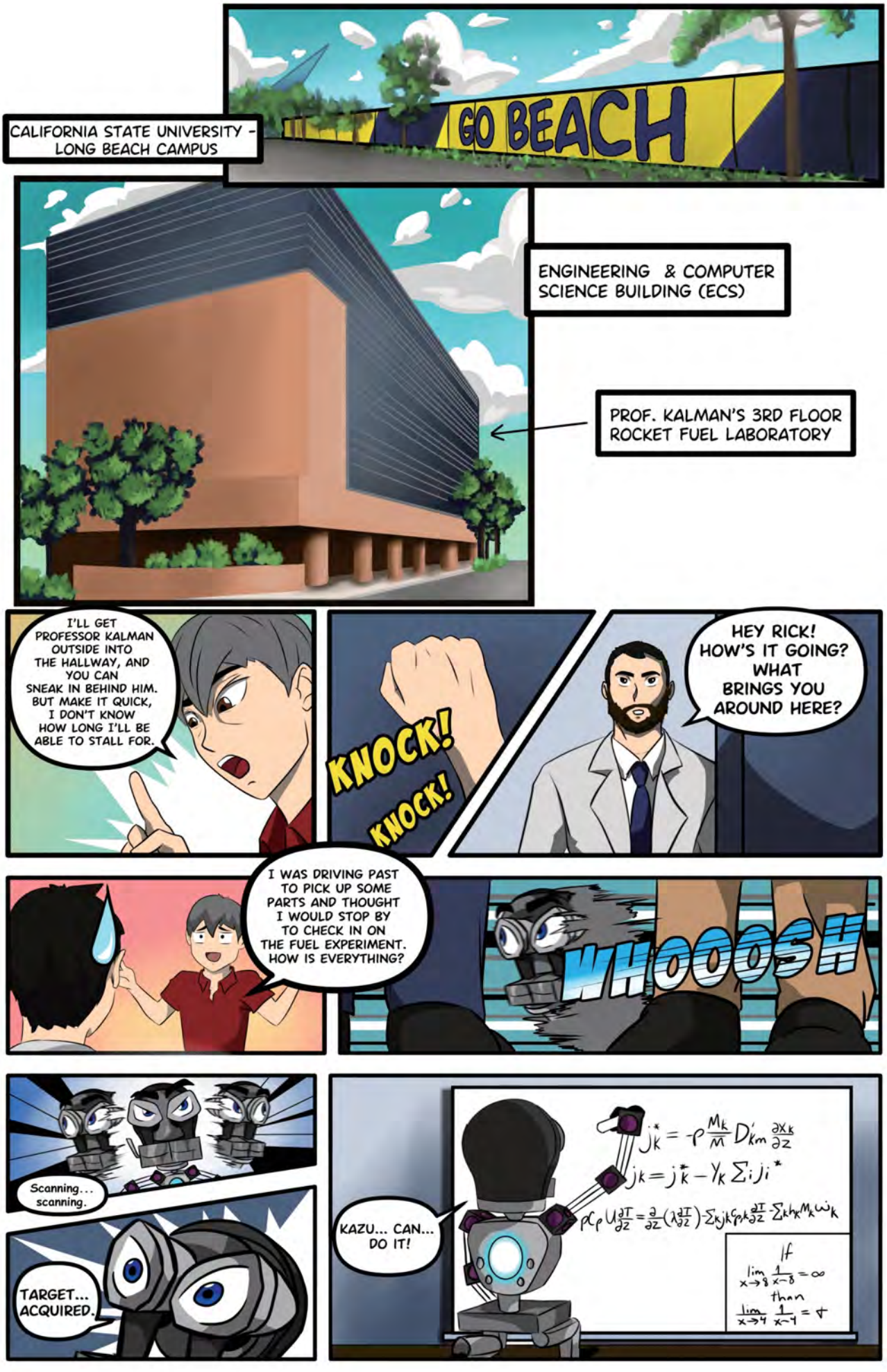

WOW...THAT WAS SOME TRIP!
WHERE AM I?
AAAH...HIDE!
SHAKE!
SHAKE!
IT'S A MESS IN HERE! WHAT HAPPENED?
ALL I KNOW IS THAT I DO NOT GET PAID ENOUGH TO DEAL WITH THIS SO I'M OUT!
WE DONT GET PAID AT ALL, BUT THIS IS A PROBLEM FOR TOMORROW. SEE YA!
THIS IS MY WAY OUT OF HERE...
HITCHIN' A RIDE


LATER THAT EVENING...BACK AT KEVIN'S (THE INTERN) DORM ROOM.
HEY MAN, YOU WOULD NOT BELIEVE WHAT HAPPENED AT WORK TODAY. THE EXPERIMENT I'VE BEEN WORKING ON WITH PROFESSOR RICK JUST IMPLODED OUT OF NOWHERE! I THINK IT HAD TO DO WITHTHE BETELGEUSE SUPERNOVA.
FOCUS ON THE PROBLEM!
ANYWAY, HAVE YOU MADE ANY PROGRESS ON THAT ASSIGNMENT? I'VE BEEN STARING AT IT FOR DAYS, BUT I JUST CAN'T FOCUS ON THE PROBLEM.
I HEAR YA, LET ME KNOW IF YOU FIGURE IT OUT. TALK TO YOU LATER.
VZZZT
HMMM...IS SOMETHING BURNING?
FLUSH
WHAT? HOW? WHO? AND I... I THINK IT'S RIGHT! I DIDN'T PUT THAT THERE, DID I?
DUDE, I GOT THE ANSWER TO THE LAST PROBLEM, I'M JUST NOT SURE HOW...
GREAT. I'LL SEE YOU IN A FEW.

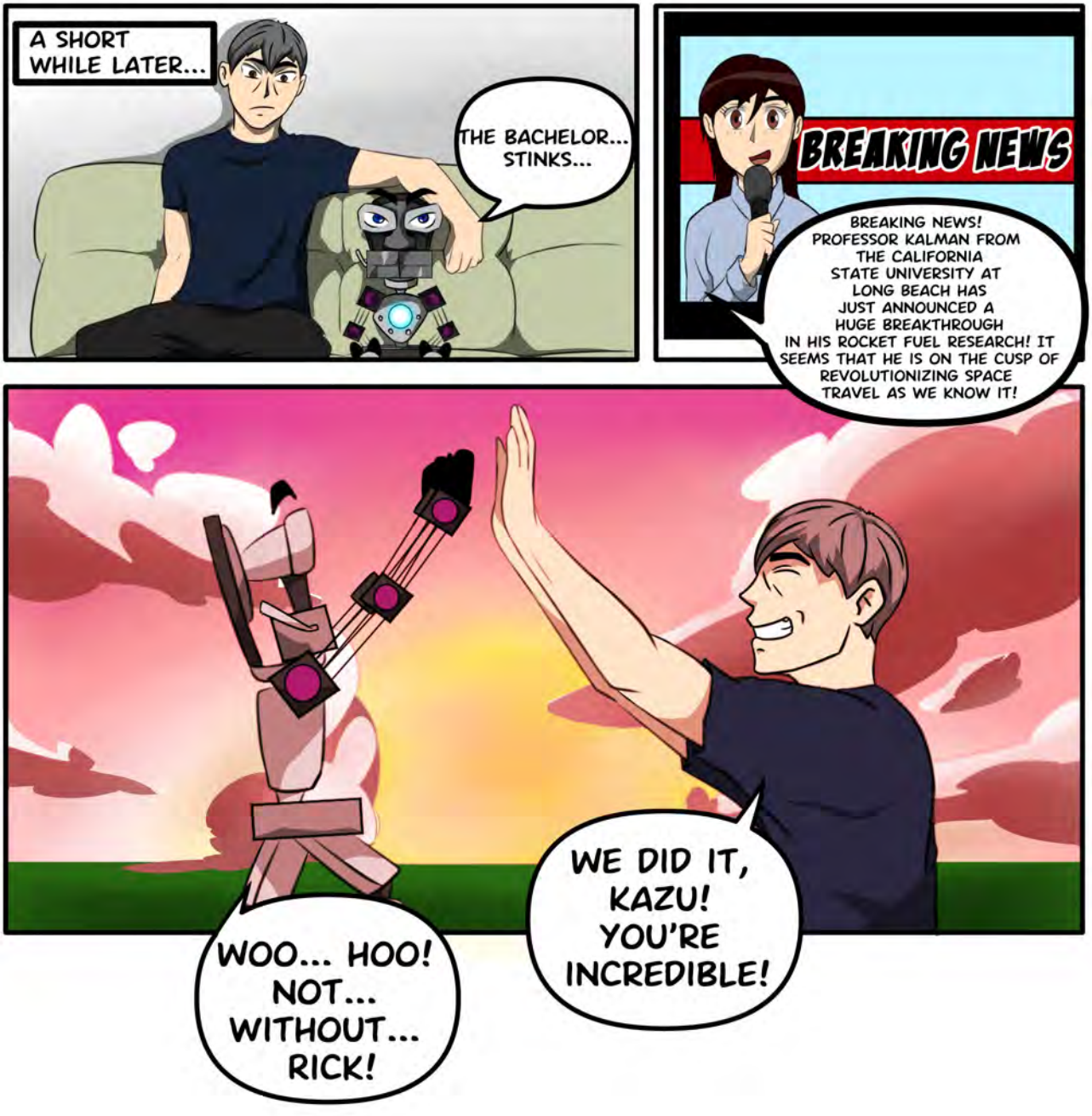

PROFESSOR KALMAN FROM THE CALIFORNIA STATE UNIVERSITY, LONG BEACH IS HERE WITH US TODAY TO TALK ABOUT HIS PLANS TO REVOLUTIONIZE ROCKET FUEL AND SPACE TRAVEL!
WOAH... SPACE...
WHAT THE...?
HELLO, KAZU
THERE IS NOTHING TO BE AFRAID OF KAZU. I'M SHIORI – YOU ARE MY AVATAR. I'M INSIDE YOUR HEAD AND I'LL BE HERE TO GUIDE YOU.
My name is Kazu?
YES KAZU... WE NEED YOU TO HELP PROFESSOR KALMAN SOLVE HIS PROBLEM, BUT FIRST YOU MUST FIND PROFESSOR RICK AND GET HIS HELP.
PROFESSOR RICK??? ...INTERN KEVIN CAN HELP ME FIND HIM!
OptoSigr
HITCHIN' A RIDE
SOUNDS GOOD, PROFESSOR RICK! I'LL GET RIGHT ON IT.
GREAT! I'LL BE BACK IN A FEW.
WHICH ONE IS PROFESSOR RICK?

I'LL HIDE IN THIS SPECIAL ROOM THAT PEOPLE GO INTO ALONE UNTIL PROFESSOR RICK ARRIVES.
YOU... RICK?
AAAHHHHH!!!
AAAHHHHH!!!
YOU ARE MADE OF THE OPTOMECHANICAL PARTS WE WERE USING IN KALMAN'S EXPERIMENT!
WE HELP... KAL... MAN...
I... AM KAZU...
WHAT ARE YOU?
ARE YOU SAYING THAT YOU WANT TO HELP PROFESSOR KALMAN? I DON'T UNDERSTAND... I DON'T EVEN KNOW WHAT YOU ARE!
NOT... IMPORTANT. WE HELP... KAL... MAN. I... FIX... EXPERIMENT.
OKAY, COME WITH ME. BUT...LET ME FINISH MY BUSINESS IN THE BATHROOM

*LiDAR "Light Detection and Ranging" lasers are used to create a 3D image of an environment acting as a vehicle's eyes to see in all directions to identify objects to avoid collisions with pedestrians, cyclists, animals, and other vehicles.

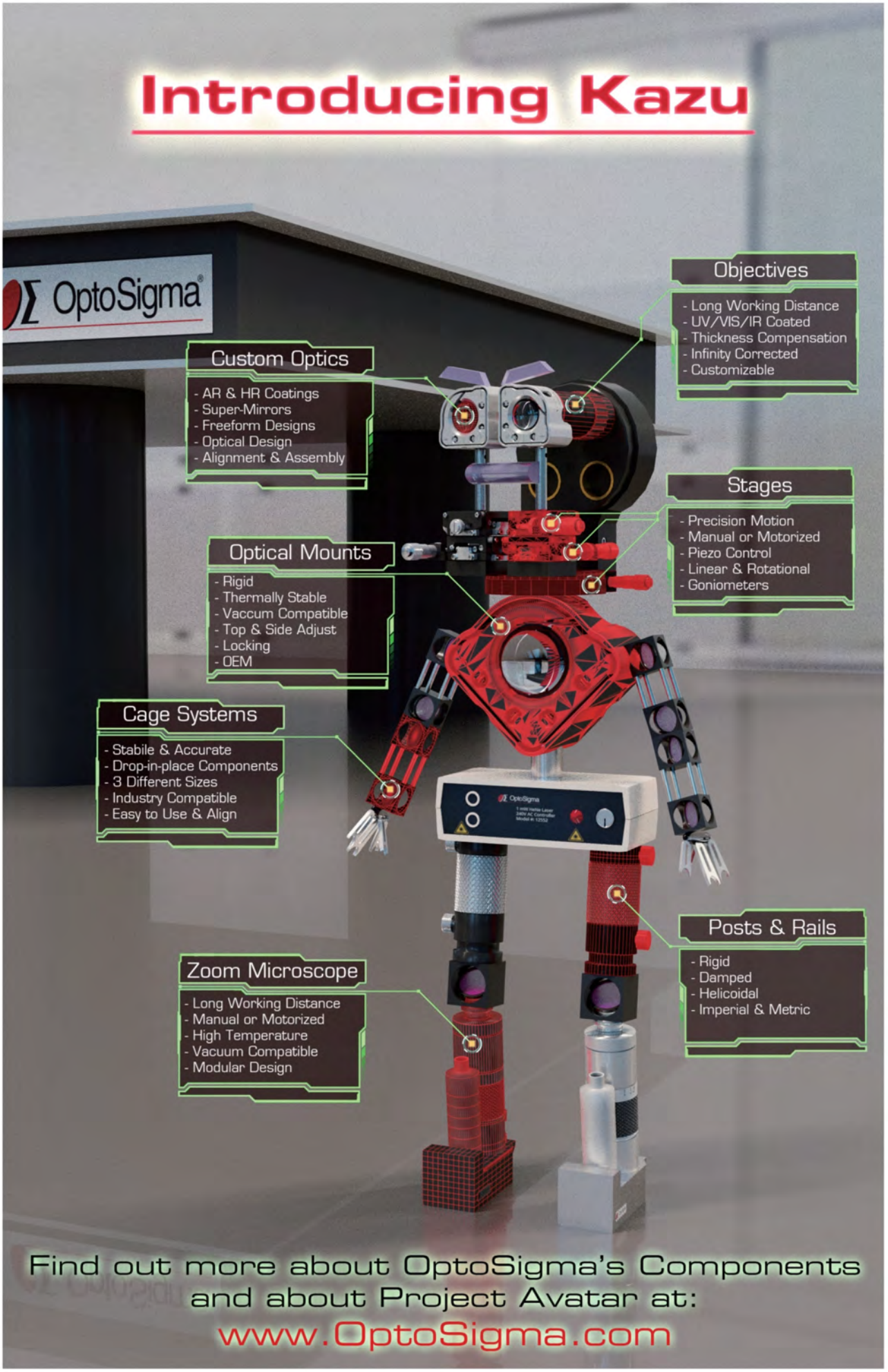

CALIFORNIA STATE UNIVERSITY - LONG BEACH CAMPUS
GO BEACH
ENGINEERING & COMPUTER SCIENCE BUILDING (ECS)
PROF. KALMAN'S 3RD FLOOR ROCKET FUEL LABORATORY
I'LL GET PROFESSOR KALMAN OUTSIDE INTO THE HALLWAY, AND YOU CAN SNEAK IN BEHIND HIM. BUT MAKE IT QUICK, I DON'T KNOW HOW LONG I'LL BE ABLE TO STALL FOR.
KNOCK! KNOCK!
HEY RICK! HOW'S IT GOING? WHAT BRINGS YOU AROUND HERE?
I WAS DRIVING PAST TO PICK UP SOME PARTS AND THOUGHT I WOULD STOP BY TO CHECK IN ON THE FUEL EXPERIMENT. HOW IS EVERYTHING?
WHOOOOSH
Scanning... scanning.
TARGET... ACQUIRED.
KAZU... CAN... DO IT!
$j_k^* = -\rho \frac{M_k}{M} D'_{km} \frac{\partial x_k}{\partial z}$
$j_k = j_k^* - Y_k \sum_i j_i^*$
$\rho C_p U \frac{\partial T}{\partial z} = \frac{\partial}{\partial z}\left(\lambda \frac{\partial T}{\partial z}\right) - \sum_k j_k C_{pk} \frac{\partial T}{\partial z} - \sum_k h_k M_k \omega_k$
If
$\lim_{x \to 8} \frac{1}{x-8} = \infty$
than
$\lim_{x \to 4} \frac{1}{x-4} = \infty$

Dr. Joe Kalman is a professor at CSLB Mechanical & Aerospace Engineering Department. His research focuses on the combustion of solid fuels and energetic materials for propulsion and defense applications with an emphasis on non-intrusive diagnostics. His work seeks to understand the underlying physics and chemistry of how these materials ignite, decompose, and deflagrate.



FIND OUT MORE ABOUT THE ADVENTURES OF KAZU AND THE PURPOSE BEHIND PROJECT AVATAR IN THE UPCOMING EPISODE, "VOLUME 2: GENESIS OF THE CREW"

Introducing Kazu



Find out more about OptoSigma's Components and about Project Avatar at:

www.OptoSigma.com