



FAR OUT!

by Lili Wilkinson

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My name is Stella Kaufman, and this is my last minute on Earth.

We're all strapped into our seats on the spaceplane – me and my five-year-old brother Cosmo in the cabin, and Mum in the cockpit. We won't be here for long – it takes six hours to get to the Lunar Gateway, where Mama is waiting for us at our actual spaceship. The one we're going to be living on for the next four years with a small team of engineers and geologists.

Cosmo looks like he's going to barf. He'd better not – throwing up in space isn't anything like doing it on Earth. If you spew in microgravity, it floats around and gets everywhere. It's dangerous, as well as super gross.

I hand him one of the special spew-bags that's tucked into the console between our seats, but he shakes his head, so I put it back.

Mum looks over her shoulder at us. 'You two ready?'

I nod and grin, but Cosmo just looks vaguely green and clutches Hadfield, the toy frog I made him, tightly to his chest.

Our whole family is obsessed with space. My mums are both astronauts – Mum is a pilot and Mama is an engineer. My grandmother was an astronaut. My whole life has been spent looking up at the stars, and in eight minutes and forty-two seconds, I'm actually going to be up there.

They're calling us the Callisto Four. We're not the first family to go to space. People go to space all the time – tourists and engineers and scientists. There are kids living at the Lunar Gateway, and on the Martian Outpost.

But we're the first family to go to Callisto, one of Jupiter's moons. The first family to go further than Mars. Our mission is to set up a brand-new outpost. It's going to take us four years to get there, and then another year working on the surface before the first ship full of residents arrives. I'll be nineteen by then.

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At the press conference before we left, a reporter asked me if I was sad to be missing out on regular teenage life – hanging out with friends and going on dates and stuff. I just laughed. Everyone gets to do those things. But I'm the only teenager who gets to go to Callisto. The only teenager who gets to wake up every morning and see the endless glittering spread of space out my bedroom window.

Won't you get bored? the reporter had asked.

Bored? In space? I don't think so. I've got my robotics kit – my goal is to have built a fully functional support robot by the time we get there.

Robotics! the reporter had replied. That's cool.

I could tell he thought I was just a little kid playing pretend, not a fourteen-year-old who has won the State Junior Robotics Fair three years in a row. Anyway, I don't care, because Mission Control just gave Mum the okay to launch. I am going to space, and that boring reporter has to stay on Earth. Ha!

'Stella?' It's Cosmo, his voice small and frightened. 'Can you make Hadfield dance?'

Hadfield was my Robotics Fair-winning project last year. Cosmo loves him, and I'm pretty proud of his programming. He can move all his limbs, hop, and even dance.

I make a series of gestures on my watch, and the speaker inside Hadfield starts to emit a thumping bass rhythm as Cosmo's favourite song, 'Galaxy Vibes', begins to play. Hadfield sways in time with the music before leaping into the sequence of dance moves that made this song famous.

Spin, spin, reach for the stars, far... out!

Cosmo sings along and does the moves as best he can around his seatbelt. I'm glad he's distracted as the engines beneath us ignite with a roar. My heart starts to pound.

It's finally happening.

Goodbye, Earth.

Hadfield spins and spins, then reaches his arms up, before falling flat on the floor with a splat, his arms and legs spread out wide.

Far... out!

I've heard about this part, and I've watched heaps of videos and done VR sims of it. I thought it wouldn't be a big deal. And I've been on high-speed planes before. I know that swooping sensation when a plane takes off, where your stomach kind of feels like it's been left behind and your bum goes all tingly.

This feels *nothing* like that.

An olden-days astronaut once said that lift-off was essentially the same as getting strapped to an exploding bomb.

He wasn't wrong.

I feel like I've been punched by a giant fist and we're shooting up and up and up into the sky. The engines are so loud I can't hear anything else, except for the very faint strains of 'Galaxy Vibes' coming from Hadfield.

Spin, spin, reach for the stars, far... out!

The spaceplane is shaking and shuddering. I'm afraid it's going to break apart and we're all going to plummet back down to the ground in bits.

I glance over at Cosmo, who has his eyes screwed shut. I feel so heavy, like I'm being buried alive under wet sand. I can barely breathe.

There are two terrifying explosions, and now I'm certain we are going to die, even though I'm pretty sure it's just the rocket boosters decoupling from the spaceplane. Is it supposed to sound like that?

Mum looks back at me and says something, but I can't hear her over the roar. She smiles encouragingly, but I can't tell if it's a *don't worry this is normal* smile, or a *looking at my daughter one last time before we all die* smile.

But then the boosters drop away and suddenly the roaring noise, the shuddering and shaking, the incredible weight pressing on my chest – all of it has stopped.

Everything is perfectly still. My ears are ringing in the sudden quiet. My bum lifts off my seat and my seatbelt tightens, stopping me from floating away.

Hadfield comes rising up from the floor, except I guess it isn't the floor anymore. Up and down don't exist in microgravity.

'Welcome to space,' says Mum with a grin, as she pushes off from the pilot's chair and floats towards us.

It feels like the spaceplane isn't moving, but Mum assures me that we are in fact travelling at 28,000 kilometres per hour, and then tells me some stuff about our vestibular systems and gravity that I don't really listen to, because I am in space.

In *space!*

I click my own seatbelt off and feel my body drift into the air. Cosmo rises up beside me and grabs Hadfield right out of the air, and for a few moments we all enjoy the feeling of weightlessness.

'Hadfield wants to do a space dance!' Cosmo says, and I make the gesture on my watch.

Hadfield wriggles and grooves in microgravity, and we all do the moves with him.

Spin, spin, reach for the stars, far... out!

We can't fall on the floor on our bellies the way we usually do at the end, because there is no floor, and no gravity to make us fall. But it's even more fun this way, spread out wide and floating. Is this how stingrays feel all the time?

Mum twirls around, and I notice that the stitching in her flight suit has come loose, just over her shoulder. I make a mental reminder to tell her later, so she can fix it.

We got to choose the colour of our suits. Mum's is blue. Mine is purple.

Mama's is green and Cosmo's is yellow. Back in the beginning of the space program, the suits were huge and bulky, but now it's just like wearing a regular jumpsuit. They use nanofibres to regulate the temperature inside. We

still have to wear a MAG though – a Maximum Absorbency Garment, also known as a Space Nappy. There's no toilet on the spaceplane and it'll be six hours. I'm hoping the journalist I spoke to doesn't know about that part.

Space travel is so glamorous.

'Mum, catch!' says Cosmo, and he sends Hadfield twirling and spinning slowly through the air towards her.

As he does so, the spaceplane makes a little shudder, and a beeping noise sounds on the pilot's console. Mum turns her head to look at it, and misses Hadfield, who sails past her into the cockpit.

'Just some space debris,' she says, floating over to the console and tapping the screen. 'Nothing to worry about.'

But she's wrong, because a moment later the ship makes a sudden lurch, and all the lights turn red. We get thrown against the upper wall of the spaceplane.

'Ow!' says Cosmo, but he's okay.

'Don't panic,' says Mum, which is exactly the kind of thing you say to make people panic. 'There was more debris than expected. We've been knocked slightly off course. I need to do some calculations to adjust our trajectory.'

Cosmo looks over at me, his expression full of concern. I smile brightly at him. 'Nothing to worry about,' I tell him.

But I am worried.

Just the slightest change in our course could mean we miss the Lunar Gateway by thousands of kilometres and go hurtling into space in a spaceplane that is in no way equipped for long-haul travel.

I take a deep breath. Mum is one of the best pilots in the world. There's a reason why they chose our family to go to Callisto. She'll get us back on course.

Cosmo starts to pull himself along the wall towards the cockpit. 'I want Mum,' he says.

I grab his ankle and haul him back. 'Mum has to concentrate on some maths stuff for a minute to make sure we get back on track. We should get in our seats and buckle up.'

The spaceplane is juddering a little, like we're still being peppered with space junk.

The World Space Coalition has done a good job of cleaning up the junk that humans left in low-Earth orbit. Most of the big stuff is gone now, swept away by robotic arms or caught in giant nets. But there are still hundreds of millions of small pieces of debris from old satellites and other space missions. And just a tiny fleck of paint, travelling at 28,000 kilometres per hour, can be enough to damage a spaceplane or a satellite.

'You kids all right?' Mum asks over her shoulder. Her fingers fly across the touchscreen, running complicated simulations to make sure we get safely to the Lunar Gateway.

Cosmo is sniffing. 'I want Hadfield,' he whimpers.

'Shh,' I tell him. 'Don't be such a baby. Just let Mum do her thing.'

Mum hears us. 'It's okay,' she says, reaching up to pluck Hadfield from where he's floating above her head.

She uses one of the handrails to propel herself towards us, but before she can go very far, the hatch between us and the cockpit closes with a *whoomp*, sealing us off from her.

Cosmo lets out a noise that is somewhere between a scream and a wail.

A calm female voice comes over the intercom. '*Hull breach detected in cockpit. Cabin pressure dropping.*'

Hull breach.

A hole.

A bit of the space junk has made a hole in the spaceplane. I see Mum's hair starting to blow around her face as her helmet visor comes down. She lets go of Hadfield, and gestures at us to put our helmet visors down too, just in case.

I help Cosmo with his, because he's crying properly now.

'It's going to be fine,' I tell him. 'Mum is going to finish the course correction, then she'll find and plug the hole. Think of the story we'll have to tell Mama over dinner tonight!'

But Cosmo isn't listening to me. He's pressed right up against the double perspex window that now separates us from Mum.

'Come on,' I tell him. 'We have to get into our seats.'

The cockpit looks like it has been hit by a freak gust of wind. I can see Mum's seatbelt whipping around like a snake, and Hadfield is dancing jerkily in the air. But we can't hear any of it, not even the alarm. Everything in the cabin is totally silent and still. It's kind of spooky.

Mum says something to us, but it seems like the intercom in her flight suit isn't working, because I can't hear her. She turns back to the touchpad, and that's when I see it.

The loose stitching on Mum's flight suit is now a hole. It must have come apart when the space debris first hit us.

'Mum?' I say into the intercom. 'Mum? Can you hear me?'

She doesn't look up from the console.

I shove Cosmo out of the way and start to bang on the perspex hatch between us. 'Mum!' I yell. 'Look over here!'

But she can't hear me.

Cosmo has gone quiet. 'Stella?' he says, his voice all wobbly. 'Stella, what's wrong? Aren't we supposed to be getting into our seats?'

I don't answer him. I don't know how to tell my little brother that our mother is in a rapidly depressurising cabin with a ripped spacesuit, and unless she does something to patch the hole very, very soon, she is going to run out of oxygen and pass out, and then... well, I don't want to think about what happens then.

I can see the hole in the spaceplane hull, right opposite us. It's about the

size of a dollar coin. You wouldn't think something so tiny would cause much damage, but all the oxygen in the cockpit is streaming out of it, and fast.

Finally, Mum turns away from the touchpad, and pushes herself over to the equipment cupboard that lines one of the cockpit walls. She opens a drawer and pulls out a thin black plastic square, and I breathe a sigh of relief. She's got an emergency patch for the hull. All she needs to do is peel off the sticky backing and slap it over the hole. Then the cockpit will repressurise and she'll be fine, and we can head off to the Lunar Gateway and start our adventure.

'You can do it, Mum!' I yell, even though she can't hear me.

She hesitates for a moment, looking down at the emergency square with a puzzled frown on her face. Then it slips from her gloved fingers. She looks up at me, and I gesture to my own shoulder and point at her.

Her frown deepens, and she puts a hand to her shoulder, near where the tear in her suit is, understanding dawning on her face.

'Just patch the ship!' I yell.

Mum reaches out for the patch, which is spinning and tumbling in the wind created by the hole, but she can't close her fingers on it. I see her breathing fast now, her cheeks flushed. She's concentrating so hard, but without enough oxygen, she can't quite get her body to do what she's telling it to do.

'What's wrong with her?' Cosmo asks.

'She can't breathe,' I whisper. 'There isn't enough oxygen left in the cabin.'

Mum's eyes droop closed, and her whole body goes limp.

My own body feels like it's been plunged into ice water.

Mum isn't moving.

'Is she dead?' Cosmo asks in a very small voice.

'No,' I tell him, trying to sound reassuring. 'She just fainted.'

But if she doesn't get some oxygen in the next three minutes, she will probably die. And if Mum dies, what happens to me and Cosmo?

It doesn't seem fair that our adventure is ending here, barely fifteen minutes after it began. We were supposed to be the first family to go to Callisto. We've barely made it out of low-Earth orbit.

I have to do something.

But what? If only I had a... a sewing robot in there that could fix the tear in Mum's flight suit. Or a medical robot that could put an oxygen mask over Mum's face.

But I don't have anything.

'I want Hadfield,' Cosmo whimpers.

I blink. There is a robot in the cockpit.

Hadfield.

He's floating up by the ceiling, getting battered around by the wind.

I can't get Hadfield to fix the tear in Mum's suit. And I can't get him to administer oxygen to her.

Hadfield only knows how to do one thing.

I touch a finger to my watch, and Hadfield scrabbles against the roof of the cockpit. He moves a few inches to the left. I move my finger in another direction, and he scrabbles down a little.

'Stella, what are you doing?' Cosmo asks.

'I just need to get him in the right position,' I say.

I have no idea if this will work.

Hadfield is still getting battered by the wind in the cockpit, but I'm learning to calculate how to push against it, and when to let it take him.

'Stella, he's getting close to the hole!' Cosmo says. 'What if he gets sucked into space?'

I can't bear to look at Mum, floating motionless in the air. I'm running out of time.

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'He won't fit through the hole,' I explain. 'And the difference in pressure isn't enough for him to get sucked through it anyway.'

'Okay, Hadfield,' I mutter. 'Time to dance.'

And I make a gesture.

The music plays through my watch as well as through Hadfield's speaker, so we can hear 'Galaxy Vibes' start up with its familiar thumping bassline.

Hadfield moves and wiggles to the music as it builds to the chorus.

'Spin, spin,' I say, as Hadfield twirls around and around.

He's so close now. Almost in position.

'Reach for the stars!' Cosmo says, his eyes wide, as Hadfield reaches his little froggy arms up over his head.

Cosmo and I look at each other, then back at Hadfield.

'Far... out!' we yell together.

Hadfield flattens himself out, as flat as a stingray, and flops onto his belly.

Right over the hole.

My hand grips Cosmo's, squeezing so tight that he yelps.

This has to work.

It has to.

Is Hadfield flat enough? Will his rubbery belly seal the hole? It's no adhesive patch, but hopefully the difference in pressure will keep him held tight against it.

The song finishes, and we wait for an agonising thirty seconds. Then the calm female voice sounds over the intercom again.

'Hull breach repaired,' she says. 'Cockpit pressure restabilising.'

I let out a whoop of victory. It worked!

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Cosmo gives me a huge hug, and then we wait another minute for the oxygen levels in the cockpit to return to normal. The perspex hatch slides open and we tumble through it, reaching up to Mum.

I press the release button on her visor and look at her face.

It's so familiar to me. Every line and freckle.

She's my mum, and she just has to be okay.

Her eyelashes flutter a little, then she opens her eyes.

I hold my breath.

'What happened?' Mum asks, blinking. 'Are you kids okay?'

'Hadfield saved you! Stella made him dance over to the hole and, look!' Cosmo points up at Hadfield. 'Far... out!'

Mum laughs and wraps us both in a big hug. 'Far out, indeed,' she says. 'That was some quick thinking, Stella. You're going to be a great astronaut.'

I grin. I don't think I want the rest of our space adventure to be quite as eventful as the first fifteen minutes, but... I can do this.

I'm ready to see the universe.



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See you in the future!

FUTURE
you

