

Florida **CHESS**

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Space Chess

American astronaut, Gregory Chamitoff, is playing against all the world ground Control Centers in a single chess game as he passes over Florida in the International Space Station

Space Chess

an interview with America's chess-playing astronaut

This "interview" was conducted by your Editor, Harvey Lerman, sending one e-mail message containing all the questions to a Flight Director of the International Space Station (ISS). After approval, the e-mail was sent on to Gregory Chamitoff, who is currently America's astronaut on board the ISS. The questions were then answered by him in one e-mail which was forwarded to us for publication in floridaCHESS.

According to the Flight Director, Robert Dempsey, "We are currently playing the first ever game of space chess. Each day Greg makes a move and then one of the control centers around the world makes the ground's move. We have a video camera setup showing his chess set on the ISS and we have one set up in Mission Control.."

1. How are you playing the game... on an electronic screen? or with a magnetic set? I'd hate to see the pieces start floating around the station. Who had the idea of playing chess in space ... how did it come about and how did the chess set make the trip? Is it yours or did someone have one made for the trip?

I'm playing on a board that I brought up with me. I've been thinking about this ever since Expedition 6. I was a crew support astronaut for that crew and worked as Capcom. One of the crew and I shared an interest in chess. I suggested that we play 'over the loops', but it never worked out. Ever since then I thought it would be a fun thing to do when (and if) I got to fly on the Station.

I was looking for the perfect chess set for Space. It needed to be large enough to be easily visible on a video camera view that the ground would normally be using. The pieces would have to stick to the board very reliably, and it had to be ultra lightweight because our personal allocation of 'stuff' that we can bring is extremely limited. I eventually found the perfect chess set. It had magnetic pieces and a felt board with a flexible metallic inner sheet. On the ground, you could literally set up the board and then pick it up by a corner and carry it off without anything falling off. Unfortunately, though, I eventually found out that our NASA safety experts don't want us to bring anything magnetic onboard, because of the potential that it could interfere with the operation of onboard systems. So I ended up doing things the NASA way, which, of course, means velcro! I'm using the same board from that original set, and I bought an additional set with cheap hollow plastic pieces that were just the right size. On the positive side, this chess set was even lighter than the original. Once onboard, I spent one late weekend night cutting velcro circles to fit on the pieces. Fortunately, the felt on the board works great as the other side for the velcro. I haven't totally lost a piece yet, but one of the rooks did escape for about 24 hours. I found it at one of the air-flow return filters in the US Laboratory.

2. Do you normally play much chess when on Earth? Where do you live and do you participate in any local chess club when on Earth?

I played chess all the time when I was younger. My father taught me how to play when I was very young, and he always joked that he couldn't beat me after I turned 4. How old I actually was when I learned, and how many years he let me win, I'll never know, but he encouraged me a great deal and played with me endlessly when I was a kid. I played chess in school, started a few chess clubs, and won several small tournaments when I was a kid. Once or twice I played in official tournaments, but never took it that seriously. In recent times (like the last decade), it seems that I rarely get a chance to play chess with anyone, although I have a few times. I've enjoyed teaching some of the younger members of my family, and children of friends, how to play, and encouraged them in the same way my father did for me.

I do play chess occasionally against my computer or even my phone. I have a chess program on my phone that usually wins - it's humiliating to think that you can't beat your own phone at chess.

3. Are others in the crew helping you or do you play alone? What do they think about it?

Well, we are officially playing as "Crew vs. Ground", so that's the plan. They are kibitzing here and there, and keeping a close eye on the game.

4. I hear your opponents may be using the help of a Grand Master. [The rumor was not true... see game. - Ed.] Are you hoping to have a Cosmonaut get a Russian GM to help you?

The fun of this is that we're playing 'Crew vs. Ground', although we've really handicapped the ground quite significantly by making the different control centers take turns with their moves. They are not supposed to interact between control centers to discuss their strategy, and so this makes it an additional challenge for the ground. Hopefully this evens the odds a bit!

5. Do you take a while to plan your move, or do you just come up with it while "on the john"? Do you have any chess books or other material to help you decide on the move? Do your other duties get in the way of playing the game?

I'm taking a day or more between moves, so I have plenty of time to stare at the board. I'm usually too busy during the day to think much about it, so I tend to think about my move in the evening. The only problem with taking so long between moves is that there is now some pressure to make sure it's not a stupid move. In fact, this game has kept me up quite late on several occasions, but I'm enjoying it very much. We do have software games on-orbit, including chess, and I've spent some time playing games against the computer as well.

6. Can we get a photo of you... playing chess... especially while making the winning move?

I'll be happy to do that - it's a good idea for my own scrapbook too. [See cover - Ed.]

7. Do you have some sort of wager on the game? What prize do you get for winning? I know the chess world would be thrilled to read about your story.

There are no wagers of any kind, this is just for fun. I guess we'll have to see how this evolves for game number 2 and beyond. It would be fun to play simultaneous games from here. The Control Center in Moscow said that they would rather make all of their own moves (naturally)! I don't know if I could get any sleep if I tried to play 6 simultaneous games, but why not - it could be fun to do that. Someone in Houston (I would like to know who) came up with an Excel spreadsheet to track the game. [See page 6 - Ed]

It's great - it has all the moves listed, but also has a graphical representation of the board. If we start playing multiple games, we could use this to keep track of them all.

8. I just saw the position after your 16th move and think you're "putting it" to them with that one! How do you think the game has proceeded so far?

I think I got very lucky with one small move early on - that was P-QR4. It's made it possible for me to eventually corner black's queen. I've traded a lot of material for that queen, though, and it's not clear how much of an advantage it will turn out to be. But at the moment I'm optimistic.

9. I just read in the paper that they "retreat you into the Soyuz for the entire space walks in case of an emergency". Is that so you can concentrate on the chess game in case the ground makes a surprising move?

I did spend a lot of time crammed into the Soyuz descent capsule during the two recent Russian spacewalks. Each time it was about 11 hours, and I now know for sure that I'm not completely claustrophobic. The reason for this was to make sure that the three of us stayed on the same side of a module at vacuum in the event that there was a problem repressurizing after the EVA [Extra Vehicular Activity; i.e., spacewalk—Ed]. With the Soyuz parked in its current location, the EVA hatch is between the main Station modules and our rescue vehicle (the Soyuz). We have a rule that basically assures that the crew is never separated from the rescue vehicle (and certainly not by having a module at vacuum in the path). So in the case of some problem during the EVA, my crew-mates would have entered the upper part of the Soyuz vehicle and repressurized there before doffing their suits. In that case, we would either have to undock and redock the Soyuz to a different port on the Station, or return to Earth, depending on the nature of the problem.

As such, I also had a lot of extra equipment in there with me to handle a variety of off-nominal situations. Although there would normally be three people in there for a descent, it was quite full with just one person, 3 suits, and all the extra gear I had. Admittedly, though, some of that gear was to keep me busy - a computer, extra batteries, a book, a camera, food, water, extra clothing (it gets cold in there), etc.

I didn't play any chess in there, but I did write some letters, listened to music, and I watched a ton of Star Trek and StarGate I. For the second time around, I basically did a Star Trek Enterprise marathon! I'm watching the whole Enterprise series from beginning to end - usually one episode a day while I'm on our stationary cycling machine. It was a little strange to be watching Sci-Fi while looking out the Soyuz window down on the Earth. For all my life it seemed like hopeful fiction, but here I was sitting in a real spacecraft flying high above a beautiful planet.

I feel so fortunate to live at a time when we are beginning our exploration of Space, and to have a chance to be part of it. We might not have warp drive and transporters, but there's no denying that we have a permanent off-world presence on an amazing, huge, and very capable International Space Station up here, and that, in the future, people will be living and working on all kinds of space facilities to explore and expand humanity beyond Earth. From right here it seems like such a small and reachable step to just go farther.

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(Space Chess continued from page 3)

10. Please tell us about your some of your duties on this space mission and its main goals.

I arrived on the Shuttle STS-124 mission, which was primarily aimed at installing the new Japanese Experiment Module (JEM), also named 'Kibo' (meaning Hope). This module is a huge addition to the Space Station and a state-of-the-art, very capable space laboratory. One of my primary objectives on the ISS Expedition 17 mission is to check out all systems in the JEM and bring the scientific equipment online to begin the Japanese program of scientific research. The European Columbus module is also a recently added advanced laboratory and there are numerous investigations planned there as well. Between the U.S., European, and Japanese programs, I've got a very busy 6 months up here trying to accomplish as much science as we possibly can, while also preparing the Station for a transition to a 6-person crew. In November, the STS-126 Shuttle mission will bring additional life support equipment, and the work required to reconfigure the Station to support the larger long-duration crews of the future begins now.

11. If you win would you claim to be the chess champion of space? What are your opinions of other intelligent life in the universe that may offer a challenge to your title?

I hope that the 'handicap' we gave to the Control Centers will assure that no one can take sole blame or credit for however this game turns out. We're playing for the fun of it, and for the camaraderie and team spirit that I hope it generates between centers on the ground and with us onboard.

I haven't seen any aliens out here that can play chess, but I keep looking!

Dr. Gregory Chamitoff is currently serving a six-month tour of duty aboard the International Space Station as Expedition 17 ISS Flight Engineer and Science Officer. He launched to the station with the crew of STS-124 on May 31, 2008, docking with the station on June 2, 2008. He will return to Earth on shuttle mission STS-126.

We gratefully acknowledge the help of the following for giving us the opportunity to present this to you:

Robert Dempsey, DA8/Flight Director
Gregory Chamitoff, Astronaut

Photos courtesy NASA



#1



#2

#1 Chamitoff demonstrating an advantage he has in being able to observe from above and at any angle.

#2 MSS Houston, with Flight Director Robert Dempsey (center) and the STS-124 flight control team in June of 2008

#3 Current ISS crew, Gregory Chamitoff on the right. Russians Oleg Kononenko (left) and Sergei Volkov (son of a cosmonaut - making him the first child of an astronaut/cosmonaut to follow in footsteps) complete the crew. The photo was taken in the new Japanese module "Kibo". The American, Japanese and Russian flags are shown behind them.



#3

The Space Chess Game

The following Excel spreadsheet was written by someone at the Mission Control Center in Houston (MCC-H) to track the game.

Descriptive Notation		Control Center	Algebraic Notation		
Crew	MCC		Crew	MCC	
1	P-Q4	P-Q4	MCC-H	d4	d5
2	N-QB3	P-QB3	POIC	Nc3	c6
3	B-KB4	N-KB3	COL-CC	Bf4	Nf6
4	N-KB3	N-Q2	SSIPC	Nf3	Nbd7
5	P-K3	P-K3	MCC-M	e3	e6
6	N-K5	Q-QR4	ATV-CC	Ne5	Qa5
7	B-Q3	N-K4	MCC-H	Bd3	Nxe5
8	B-K5	B-QR6	POIC	Bxe5	Ba3
9	Q-QB1	B-QN5	COL-CC	Qc1	Bb4
10	Castle	P-QN3	SSIPC	O-O	b6
11	P-QR4	B-QR3	MCC-M	a4	Ba6
12	N-QN5	Castle	ATV-CC	Nb5	O-O
13	B-KB6	P-KB3	MCC-H	Bxf6	gxf6
14	P-QB3	P-QN4	POIC	Pc3	Pxb5
15	R-Q1	R-QB1	COL-CC	Rd1	Rc8
16	PxQN5	B-QB6	SSIPC	axb5	Bxc3
17	RxQR5	BxQR4	MCC-M	Rxa5	Bxa5
18	Q-QN1	B-QN2	ATV-CC	Qb1	Bb7
19	P-QN4	P-KB4	MCC-H	b4	f5
20	PxQR5	PxQR4	POIC	bxax5	bxax5
21	R-QB1	P-QR5	COL-CC	Rc1	a4
22	RxBQ8	BxBQ1	SSIPC	Rxc8	Bxc8
23	Q-QN4	B-Q2	MCC-M	Qb4	Bd7
24	QxPR4	R-QB1	ATV-CC	Qxa4	Rc8

The Ground Control Centers take turns making their moves as indicated

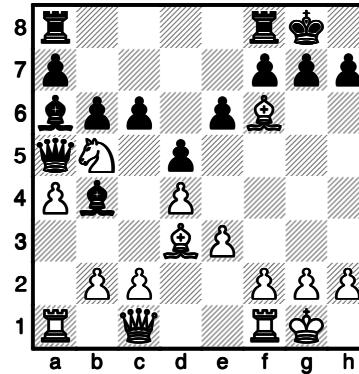
- MCC-H = Mission Control Houston
- MCC-M = Mission Control Moscow
- POIC = Payload Operations Interface Center (science payload CC)
- COL-CC = Columbus Control Center (THE European Space Agency CC)
- SSIPC = The Japanese Control Center
- ATV-CC = Automated Transfer Vehicle Control Center

Obviously "Ground" has a lot of time to think. But the centers don't coordinate so are really playing by committee. I.e. MCC-H has one of the different flight control positions make the move when it is MCC-H's turn.



The MCC-H board after 17.RxQ (Note: Ground is Black.)

Position after 13.Bxf6.



At this point Dr. Juan C. Yabraian, who used to play in USCF tournaments in Texas in the early 1990s and had a near-expert rating looked at the position for MCC-H and commented:

Our next move has to be g7 x f6 (PxB). At this point in the game, our King is very vulnerable. White is threatening to checkmate in a few moves, so we need to run. Most likely, Greg (White) will move his

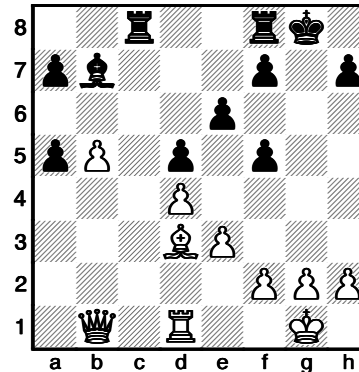
Queen to d1 in order to later take the pawn at h7 and check the King. Before that can happen, we need to move the King's Rook to c8 to give the King some room. He'll move the Queen in an effort to check, but we should try eventually to get our King to e7, where it will be safer.

At some point, Greg will probably focus on our Queen, which is unfortunately trapped. He will probably move his c2 pawn up one square to threaten our black square Bishop. We will have to sacrifice that Bishop. After that, our Queen can take that pawn and break free, going to d6 where it will have more room to maneuver.

The game will be very difficult to win. The best we can do is use our two Rooks and our Queen to threaten White's position, but otherwise, we will probably have to resign.

This led to the rumor that a "Grand Master" was advising the Ground, and that he said "We're screwed" at this point. His advise was prophetic, but not distributed, and not followed.

Position after 20... bxa5.



This is the position as we "go to print". And your Editor's comment was:

"All White has to do now is (in any order): Move his King toward the center, trade rooks, and win Black's helpless QRP. Barring any blunder on White's part, the Queen would infiltrate and open things up to win more material and eventually force a white pawn thru."

All moves after move 20 were made after the story was published.

25	QxPR7	R-QB8+	MCC-H	Qxa7	Rc1+	25
26	B-KB1	B-QB1	POIC	Bf1	Bc8	26
27	P-QN6	K-KN2	COL-CC	b6	Kg7	27
28	P-QN7	BxPb7	SSIPC	b7	Bb7	28
29	QxBb7	K-KB3	MCC-M	Qb7	K f 6	29
30	P-KB3	P-QR6	ATV-CC	f3	Ph6	30

and Black resigned

1-0