

5th World Chess Software Championship

The 5th World Chess Software Championship started on July 4, 2015. Eight programs participate in a round robin tournament of seven rounds. The tournament takes place at the Leiden University and is organized by the ICGA, LIACS and LCDS. The sponsors are Aegon, Museum Boerhaave, the municipality of Leiden, Leiden University, ICGA, iSSC, SurfSara, Digital Game Technology and NWO. It is held in conjunction with the 18th Computer Olympiad, the 14th Advances in Computer Games conference and, a special lecture for the general public on intelligent programs for rowing, football and diplomacy. Additional sponsors are therefore the Faculty of Science, the Royal Dutch Rowing Federation and Dutch Angle.TV.

The 5th World Computer Software Championship is played on equal hardware (Intel I7 with 4 cores and 8 threads), without internet access, for all participants. Time control: 45 minutes per program per game with 15 seconds per move from move 1.

Round 1

Komodo – Jonny 1-0
Ginkgo – Protector ½-½
Hiarcs – Fridolin 1-0
Shredder – Maverick 1-0

The software tournament has its own requirement and peculiarities. World Champion Jonny is for instance rather handicapped by the platform. In the WCCC it played with 2400 cores and in this tournaments with 4 cores containing 8 threads. So that is quite a difference. With this knowledge, the alerted spectators understand what happened in the game. After a quiet opening the midgame required full attention from both sides. Komodo had the initiative but Jonny reacted accurately, at least in the beginning. However the dilemma of choice occurred and in some cases Jonny did not have enough time to compute the consequences of the options. It resulted in some wrong choices, which brought him in an awkward position.

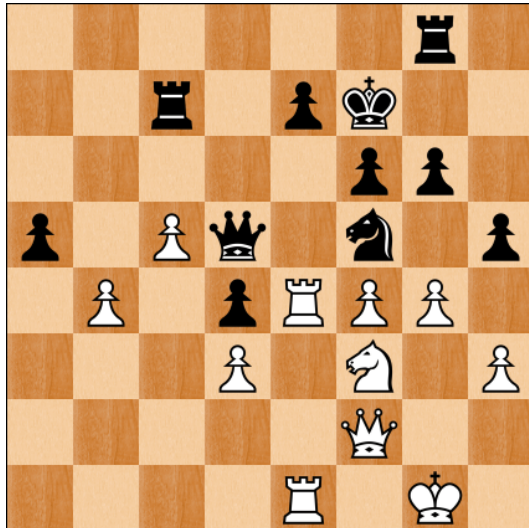


Figure 1 Position after 37. ... Rg8

Komodo did not have any compassion with his opponent. He played 38. Ng5+ and after 38. ... fxg5 he played 39. Re5 and counted him out on move 45. The first defeat of the new world champion all be it in another class.

The game Ginkgo – Protector was accepted queens gambit in which white aimed at activity in a dynamic position. For this purpose it sacrificed a pawn of which it believes it will be regained after some time. And indeed this idea came true. And at that time the material was almost reduced some elementary items in a rook ending. No wonder a draw was agreed.

Shredder – Maverick was a game in which Shredder took the initiative by sacrificing a pawn for chances to attack the black king. Maverick defended ingenuously but could not prevent white to win material. A black passed pawn made a direct win for white difficult so play went on. But in the end Shredder solved all obstacles and won the game.

Hiarcs – Fridolin was a game in which Hiarcs showed how to learn to play chess well. Hiarcs did normal moves and waited for deviations in the wrong direction by Fridolin. They came soon after the opening and as a result took the initiative. Some of the material, and rushed away with such a large advantage that the win soon followed. The completion of the game was easy.

Round 2

Jonny – Maverick 1-0

Fridolin – Shredder 0-1

Protector – Hiarcs ½-½

Komodo – Ginkgo ½-½

The game Komodo – Ginkgo started as an attractive spectacle. However the transition from the middle game into the end game was the start of largest part of the game: a long winding endgame. Nothing special to place and so the game ended in a draw.

It took more than 40 moves before Jonny was able to obtain any substantial advantage in his game to Maverick. Strategic lines dictated the game and that requires always knowledge of the preferences and wishes from both sides. Apparently after 40 moves the pieces guided by Jonny were better placed than the pieces guided by Maverick. The real breakthrough came in the endgame where Maverick lost its grip totally on the position. Jonny won convincingly.

If we would allow a program to receive a part of the point by adequate resistance than Fridolin would be a candidate. It played well and only had to succumb at the end of the session. Otherwise stated Shredder played an easy game since Fridolin was happy with the position of being not as good as Shredder. Even computer chess programs follow psychological lines such as acquiescence. It is a matter of acceptance. So was the practice. Fridolin had to accept a loss against Shredder.

The game Protector – HiarcS was a spectacle in it self. Immediately after the opening the players were fighting a body-to-body struggle. The level of computer play is nowadays so high that the programs have a good feeling for the compensation, which is needed for a sacrifice of the exchange. Probabilities on the realization of winning chances play an important role. Since this holds for both sides one should not be surprised that spectacular games can also end in a draw.



Figure 2 Position after 23. ... Nd5

After 24. Rxd5+ the two white bishops came to live and changed their position from the queen side to the king side. There they could keep the hostile king under attack. However this was all that resulted from the sacrifice and in the end position nothing more than perpetual check could be reached.

Round 3

Ginkgo – Jonny ½-½
 HiarcS - Komodo ½-½
 Shredder – Protector ½-½
 Maverick – Fridolin 1-0

The game Maverick – Fridolin was a game which was called in the previous century as a game characterized by: Avanti, Avanti. Black did a fianchetto and white took the opportunity to run with the h-pawn as fast as possible and take on g6 meanwhile trying to penetrate the black position along the h-file. The culmination of this attack was in 21. c3 since black is not allowed to take the white bishop on d3. The refutation is simple: 22. Bxf6.

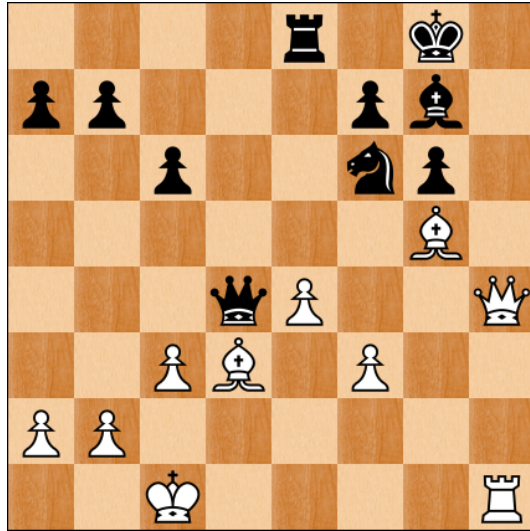


Figure 3 Position after 21. c3

The game continued with persistent trials by white to open the position to his advantage. However black defended quite well and was able to counter all attacks up to move 60. Then the table turned and black was in trouble. After 64. Bc4 the move 64. ... Qf6 is impossible by 65. Qxg8+. By this consideration black lost a pawn and one more and even a third one. So in the end white won convincingly.

The game Ginkgo – Jonny had a Semi Slav opening which turned out to be a popular beginning of a game in this tournament. Black usually tries to take the initiative by playing very active. However if white reacts adequately then white has nothing to fear and black's attempts result in an uncomfortable position. This was precisely the feeling Jonny had when considering move 23. Finally the program decided on 23. ... Bc8.



Figure 4 Position after 23. Bc5

It had seen 26 plies ahead with some extensions here and there. It found a draw by perpetual check and believed this is the best result the program can reach from the current position. So for Jonny everything what happened was seen in advance. For human beings replaying the game it is an exciting game. Jonny is offering a piece on h5 then it is offering a piece on f5 and all spectators are looking for the winning attack, which is not there. Finally Jonny is sacrificing the exchange. Then for the public as a surprise but for Jonny as a logical result the game ends with perpetual check. Black is down a rook and a piece but had seen all in advance. These are the thoughts of the current world champion. They are really impressive.

The game Shredder – Protector started as a Ruy Lopez. They followed a main variation (not the real main line). The motives were well known and the exchanges of pawns and pieces lead to a pattern that had appeared earlier in Ruy Lopez games. Right from the opening they found a repetition of moves which both sides considered as the best variation to be played. So, a draw was agreed upon.

The game Hiarcs – Komodo started as an accepted queens gambit. The best characterization of the game is almost similar to the characterization of the game above. The motifs were well known and the piece sacrifice for a handful of pawns made black alert not to take too many risks. In what happened it is clear that black understood what he could do best and that was allowing perpetual check.

Round 4

Jonny – Fridolin 1-0
 Protector – Maverick 1-0
 Komodo – Shredder ½-½
 Ginkgo – Hiarcs 1-0

In human life people would say Fridolin is promising player, since it knows the main patterns to be applied in a kings indian game. It was expected that Fridolin

would lose against the new world champion. In the beginning Fridolin lost a few tempi but this loss did not make its position very bad. The chances for white were clearly present and counter play was dangerous. So, Jonny had to compute diligently and accurately what plan to follow. For humans it is nice to see the complications but we should take into account that Jonny has seen them up to a considerable depth. A nice example is 45. Nxd6.

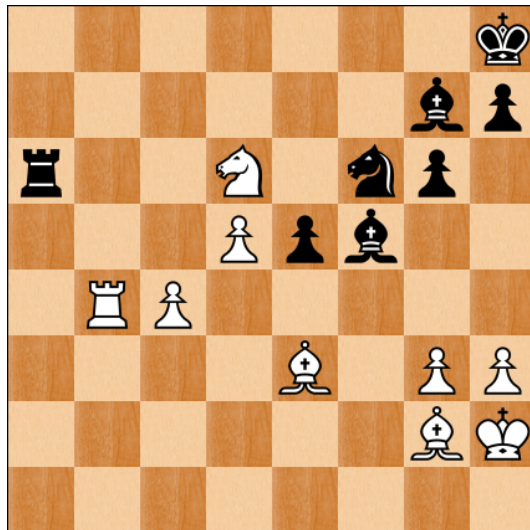


Figure 5 Position after 45. Nxd6

In the beginning of the computer chess development researchers spoke many times of the horizon effect. Now humans will speak about the horizon effect since the computers by far out-search the human view on the game. Jonny had seen everything and won deservedly.

In Protector – Maverick there was no discussion on the outcome. Protector was clearly the better player. In the transition from opening to midgame it took the initiative and soon it had advantage. The question how to materialize the advantage was solved rather easily. Still an addressing problem popped up when both programs considered the position after whites move 25. Rc5.

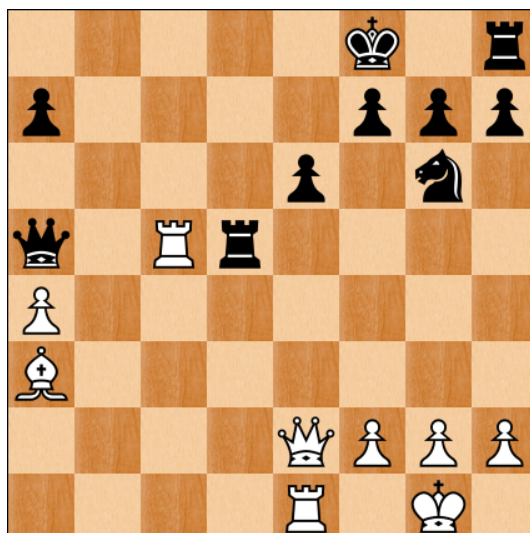
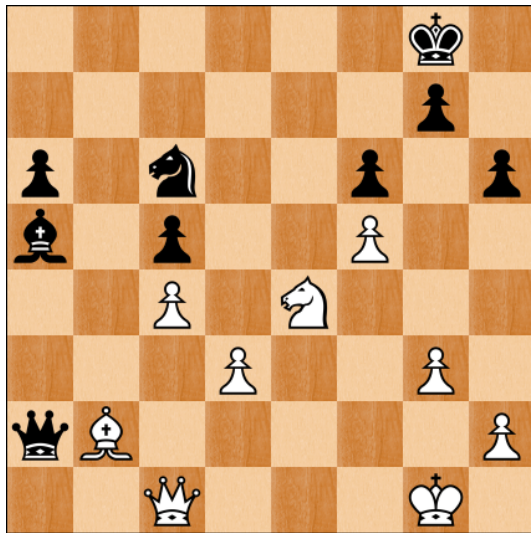


Figure 6 Position after 25. Rc5

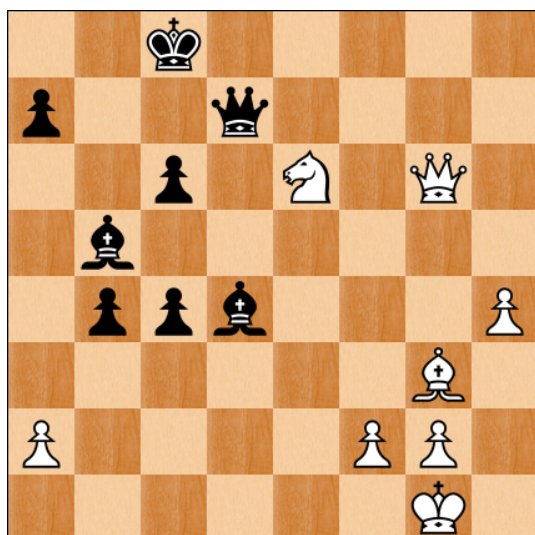
Both recaptures will result in loss. Humans definitively will recapture with the rook, so will Stockfish. However both programs Protector and Maverick believed that taking by the queen was to be preferred. For commentators, programmers and spectators it was a surprise. The choice of move did not alter the final outcome: a win for white.

In the game Komodo – Shredder the programs left the opening book quite early. Finding the right moves in a closed position is difficult with respect to future development. White played somewhat reluctant giving black the opportunity to employ some subtleties. Black gratefully took this chance and won a pawn on the queenside. Moreover black had a clear advantage on that side. So for white it was important to have a counter action on the kingside. On move 36 it saw a chance by sacrificing a bishop for a handful of pawns.



After 36. Bxf6 37. Qxh6 and 38. Nxf6 black's king was unprotected on the back rank. The series of checks was continuous and so a draw was agreed upon.

The game Ginkgo – Hiarc was again a Semi Slav opening. Both sides were fighting from the beginning with theme white is active on the kingside, black is active on the queenside. In the middlegame the focus was on exchanging the pieces and obtaining opportunities for the passed pawns. In the transition from midgame to endgame it was fascinating to see how white combined prohibiting the progress of black pawns with supporting the progress of its own pawns. The position after 41. ... Bb5 is a telling example. White had to decide between 42. h5 and 42. Nxd4.



The choice was 42. h5, b3. The variation looked double edged but it turned out that white had the better chances. The game went on for another 20 moves but white did not give away any of its advantage and won the game convincingly.

Round 5

Hiarcs – Jonny ½-½

Shredder – Ginkgo ½-½

Maverick – Komodo ½-½

Fridolin – Protector 0-1

The surprise of this round is the draw by Maverick against Komodo. The real winner of that game was the white bishop who started its career on f1. During the game he was the supporter of the white knight and the white rook which recaptured important pawns on c4 and e6. Komodo tried to complicate matters but Maverick played with courage and brains. For every challenge it had a solution. Only in the very end Maverick was slightly tricked by Komodo. First it had to give up its passed d-pawn and thereafter the exchange for a pawn. However at that point in time the material was so far reduced that the draw was not in danger. At the end of the game Komodo performed a tribute of honor by sacrificing his rook for a pawn and leading Maverick into an endgame of an edge-pawn with the wrong colored bishop. Indeed the white bishop on f1 is the boss of thirty-two white squares therefore it could not support its h-pawn to promotion. Yet the draw against Komodo is a real promotion for the playing strength of Maverick.

It is remarkable how the value of an exchange goes up and down in the evaluation of chess positions. Being an exchange up is normally considered as an advantage. However in many games in this world championship it looks like sacrificing the exchange is to be an advantage. In the game Hiarcs – Jonny black sacrificed his rook on a8 for the white fianchetto bishop. Moreover the white position has some weak pawns as objects for capturing.



With two well positioned knights many threats were in black's hand. However white was alert and prepared a nice counter attack. On f7 it entered the black position to surprise of the black king. The hidden trick of 20. Nxf7 was in the following unexpected line: 20...Rxf7 21.Qd8+ Rf8 22.Rxf8+ Bxf8 23.Bxc3 Qxc3 24.Rf1 Qxe3+ 25.Kh1 Qe4+ 26.Kg1 Qe3+ draw. Black therefore chose another line by 20. Nbd5. The game continued by some exchanges and a counter sacrifice of the exchange by white. Subsequently more pieces and pawn were exchanged and finally white decided to deliver perpetual check. A nice game and a well deserved draw. In retrospect the players were asked whether they had seen improvement of play. They answer univocally, white should have played 11. Bb2 instead of 11. Ng5.

The game Shredder – Ginkgo started as a Sicilian game with the variation as introduced by Najdorf. Soon the programs followed their own plans and ideas which was certainly not in favor for Shredder. Black developed pressure on the queenside where the white king was welcoming the penetrators. After 26. ... Nc3 black started to be in awful position that grew out to a lost position. For instance the black knight on c3 can capture the pawn a2 at each arbitrary moment.

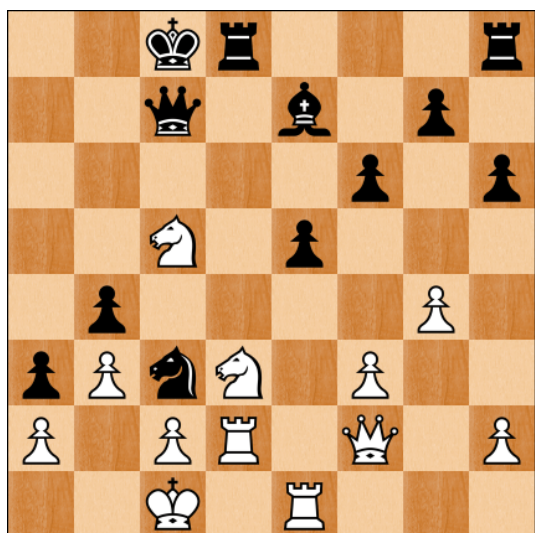


Figure 7 Position after 26. ... Nc3

Yet black could not find a suitable plan to improve his winning position and collect more substantial advantages. It was a win position, it became even a clear win position but it was never a definitely won position. Some people might believe this way to challenge white and to hope and that it will kill itself. Since white refused to do so and was waiting for an opportunity for a counter attack. And all of a sudden after 46. g5 the evaluation function began to raise.

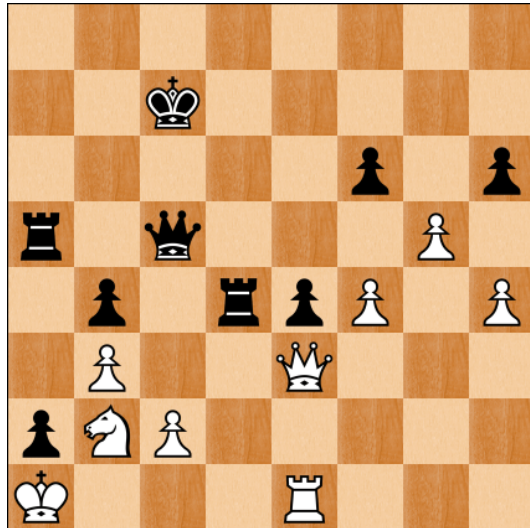


Figure 8 Position after 46. g5

This trend continued and after some time white could have some hopes for a draw. Ten moves later this was realized as expected. A draw for both sides with surprise that Ginkgo kept his chances on the title and Shredder did not have any longer any title aspirations.

The game Fridolin – Protector had a Sicilian origin. White played the Prins variation with 5. f3 and saw that his opponent was connoisseur of this opening. Black took the initiative, puts his pawns forward and placed his pieces on the appropriate squares. Soon the majority of the territory was in black's hands. Of course white tried to escape from the power as expressed by black. But it was in vain. Here again we saw a sacrifice of the exchange but it did not change the general picture of the game. Black won convincingly.

Round 6

Jonny – Protector ½-½

Komodo – Fridolin 1-0

Ginkgo – Maverick 1-0

Hiarcs – Shredder ½-½

The game Komodo - Fridolin opened with the unusual d4, Nc3 opening. It was not sufficient for white to obtain any advantage from playing the first move. Fridolin achieved a fully equal game. However reaching an equal game is one but bringing an equal game to an end is a second task. Komodo had to work very hard in the end game for seeing any chances it could chase after. Still chess is such a complex game that sometimes opportunities seem to come out of the blue. One such opportunity was taken by Komodo and it won the game as was expected by laymen and experts.

The game Hiarcs – Shredder followed a Sicilian opening, Taimanov variation. Both players creatively inserted their own ideas in the design of their configuration. It is always a dance around subtleties containing details that are very difficult to prove as valuable and reliable. Play continued on equal footing. Still after the move 13. ... Bd6 white was facing three opportunities. 14. e5, 14 Bc5 and 14. Rxd6. An important characteristic of this position is the bad position of the knight on h5 (f4 and Be2 is the main threat in this respect).



Figure 9 Position after 15. ...

In the game white played 16. Bc5 and after many exchanges the game ended in a draw. By this move white missed an excellent opportunity, namely 14. Rxd6. An example of the consequences reads as follows (according to Stockfish): 14...Qxd6 15.e5 Qc7 16.f4 c5 17.Bxc5 Bb7 18.Rg1 Rfc8 19.Bb4 Rd8 20.Bd3 Qc6 21.Kb1 Qf3 22.Qxf3 Bxf3 23.Rf1 Bg2 24.Rf2 Bb7 25.Be7 Re8 26.Bd6 g6 27.Rf1 Rac8 28.Be2 Ng7 29.a4 bxa4.

The game Jonny – Protector started almost single-issue game. Jonny had the initiative. He tried to broaden the initiative, thereafter to widen the initiative and finally to deepen the initiative. Protector was with his back towards the wall. Yet he considered the wall as his companion protector. And from that position he was able to fight back. Jonny saw that his trials to get advantage were all in vain. In human chess this is a psychologically difficult position since humans beings starting to over estimate their possibilities. That is not what Jonny did. He continued to play strong – maybe not the strongest moves are played in this phase -, but did not reach any tangible advantage. The pressure went away and the normal position that remained was easy to play into a draw. After 111 moves this expectation was asserted. Both programs were satisfied with their result.

The game Ginkgo – Maverick was a kings indian. Both sides followed well-known paths. The first real decision was 20. ... cxd5, possibly not the best move since black opened the position which in the longer run is to the advantage of white. 20. ... c5 would also be a bad choice but maybe 20. ... b6 is better.



Figure 10 Position after 22. ... Ng3

As the game continued we saw that black did not take the opportunity to take the rook on f1. The reason is given by Stockfish: 23. ... Nxf1 24.Bb6 Rc7 25.Kxf1 Nc8 26.Bxa5 Bf6 27.Bxc7 Qxc7 28.Nb2 Nb6 29.Bb5 Rc8 30.Bxd7 Qxd7 31.a5 Na8 32.Nc4 Rd8 33.Qf2 Nc7 34.Qb6 Ne8 35.Ra1 Ra8 36.Qb4 Qe7 37.Nb5 Kg8 38.Kg1 Rd8 39.a6 bxa6. As the game went on white was able to increase the pressure on the black position which resulted in along c-line and queenside to the inner of the black position on the sixth row. Black resisted as much as possible but it was a lost case and after move 52 he resigned.

Round 7

Shredder – Jonny 1-0
 Maverick – Hiarcs 0-1
 Fridolin – Ginkgo 0-1
 Protector – Komodo ½-½

The last round was an exiting round since four programs had the opportunity to share the first place. We restrict our self to the results that are the most important, namely the win of Shredder over Jonny and the win by Ginkgo against Fridolin.

Shredder – Jonny was a complex game in which both sides tried to outmaneuver the opponent. Originally shredder had the initiative and Jonny had to find the appropriate defense. After that phase Jonny tried to dictate the course by becoming active over the kingside. It did not help since Shredder was prepared and the half-open c-file was a precious asset to him and his plans. The odds went up and down although they seem to be in the margin of a drawish game. As stated earlier a decision is in the details and Shredder turned out to be a very precise collector of small advantages which influenced the final decision. In the endgame all the white pieces turned out te be on the right place and all of a sudden the black position collapsed. So the fresh world champion lost to the old world champion (both being champion form the WCCC and not the WCSC).

Fridolin faced a tough opponent in Ginkgo so he played quite modestly in the hope to keep the position even. As we all know that is not easy in chess. In this

game we saw a Ginkgo pushing on the configuration built up by white. It was a matter of indirect exchanges of pieces and rooks. Of course there is always the choice not to follow the indirect exchanges, however the question is what is better and what is the best. In the game it looked for a long time that Fridolin could hold it self but finally it was knocked out by mating threat created by black. To avoid mate white had to sacrifice the exchange and after that the game was soon over. Ginkgo won.

The game Maverick – Hiarcs was a standard game in which the better player had to find the weak places in the white position. Such weak places are mostly created by the player itself. The difficulty in chess is that different rules apply. That also holds for handling difficult positions. Obviously Maverick made some bad decisions and Hiarcs was well prepared to catch the opportunities. It realized its advantage and won the game without any excitement.

Protector – Komodo was a tough game for both combatants. Both showed aggressive intentions and alternate between aggressive moves and defensive moves. To remain aggressive black sacrificed the exchange and saw his activities were a very good compensation for the material loss. Yet the balance was never restored and so white could have still some hope to bringing the turbulence in the game to calm water and then exploiting the possession of a rook against a bishop. The pawn compensation of black made it difficult for white to realize what he had in mind. The tricks from both sides were well balanced and so a draw was a deserved outcome.

Play-offs

The first two games ended in a draw. The second two games are won by Shredder with 1½-½.