15.S50 - Poker Theory and Analytics

Tournaments
Tournaments

- Tournament Life Cycle
  - Flop Turn River Play
  - Psychology
- Bankroll Management
- PokerStars Prize League Results
# Cash Games vs Tournaments

<table>
<thead>
<tr>
<th>Cash Games</th>
<th>Tournaments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chips = Winnings</td>
<td>Finish Position = Winnings</td>
</tr>
<tr>
<td>$\text{Chip EV} = $\text{EV}$</td>
<td>$\text{Chip EV} \cong $\text{EV}$</td>
</tr>
<tr>
<td>Come-and-Go at Will</td>
<td>Locked into Tournament Structure</td>
</tr>
<tr>
<td>Unlimited Buy-ins</td>
<td>One Fixed Buy-in</td>
</tr>
<tr>
<td>Fixed Blinds</td>
<td>Increasing Blind Levels</td>
</tr>
<tr>
<td>Table Selection</td>
<td>Player Pool Selection</td>
</tr>
<tr>
<td>Higher Liquidity</td>
<td>Higher Overhead</td>
</tr>
<tr>
<td>Lower Variance</td>
<td>Higher Variance</td>
</tr>
<tr>
<td>Well-documented</td>
<td>Limited Literature</td>
</tr>
</tbody>
</table>
Why tournaments?

• Tournaments are more difficult to master

• Cash games have lots of published literature, tournaments have very little

• Tournaments are generally more publicized

• Tournament results are permanent (track record)

• Tournaments let you play higher stakes against people used to lower stakes

• ROI on tournaments is generally higher
Why not tournaments?

- Tournaments are harder to master
- Less obvious when you’re bad, long run takes forever
- More variance
- Tournaments take a long time
- High stakes generally required to get a worthwhile hourly
- Lots of incidental costs like dealer tipping, travel/hotels
- Requires more planning/research
Tournament Life Cycle

The most important tournament concept is tempo

- Early Game
- Bubble and Early Cashes
- Late Game/Final Table
Early Game

- Early Game is the majority of the tournament
- Play is very similar to cash games
- Chip EV = $EV
- Playing style based on stack size
- Establishing reads/image is extra value
Stack Sizes

- $M < 2$ – Dead Zone
- $2 < M < 8$ – Steal Period
- $8 < M < 12$ – Steal/Re-steal Period
- $12 < M < 30$ – Value Betting Zone
- $M > 30$ – Set Mining Zone
A note on tournament tempo

- The most important aspect of a tournament is playing at the right level of aggression
- You will have to win coin flips to cash
  - That’s inevitable
- Your goal is to slowly grow your stack without showdowns and avoid voluntarily entering flips
M < 2 – Dead Zone

- If you get to this Zone, it should only be because you lost a hand where you had slightly more chips
- You have virtually no Fold Equity since the BB will have odds to call any push
- Your goal is to get enough chips to regain Fold Equity
- Never fall under M=1 under any circumstance
  - This is particularly bad since even if you win at Showdown, you will still be in the dead zone
2 < M < 8 – Steal Period

- Your only move here is all-in or fold
- Every time you steal blinds, your stack increases by 10%-40%
- This is much more value than the edge you have by playing good cards
- Identify players who don’t protect their blinds and steal from them
- Adopt an image of someone who defends their blinds, but don’t
- Avoid showdowns if at all possible
- Gap Theory (Sklansky)
  - Calling requires a much stronger hand than betting
8 < M < 12 – Steal/Re-steal Period

- At this point, you have the option to fold to a raise
- Why? Your standard steal-bet will be 3BB, or about 2M.
- A re-raise of 6M more will make it +EV to call with $6/17 = 35\%$ equity, so it’s not +EV to call ATC vs a re-raise
15 < M < 30 – Value Betting Zone

- In this zone, you might actually see some flops
- Avoid flat calling pre flop, come in for a raise and c-bet the flop when heads up
- I think it’s okay to go broke on a set on an uncorrelated board
- Don’t go broke on a low two pair or TPTK, or a set on a board where a flush/straight is obvious
M > 30 – Set Mining Zone

• “Set Mining” is when you flat call a pocket pair preflop for cheap with hopes of flopping a hidden set
• In general, I recommend waiting for monster hands and value betting aggressively them once they are made
• When you are in a hand that is raised and re-raised, you should consider how many hands can beat you
  – If your hand is not the absolute best possible hand, don’t go broke for 50M
• See flops cheaply and use pot odds to assess draws to nut hands
  – Use implied odds conservatively
• If you can’t keep it together, fold JJ- until you have 30M
Flop, Turn, River Play

- Psychology – Levels of Thinking
- Medium Stack Play (M > 10)
- Psychology (Tells and Other Concepts)
Levels of Thinking

• L0 – Not reading/indifference to hand value
• L1 – What cards do I have? Hand Reading
• L2 – What cards does he have? Opponent Reading
• L3 – What cards does he think I have? Representation
• L4 – What cards does he think he’s representing?
• L5 – etc…
Levels of Thinking
We have a good hand vs ATC

UTG has 77+, ATo+, TJs+
We have a good hand vs 77+, ATo+, TJs+

UTG has 77+, ATo+, TJs+
MP1 has TT+, AQo+, AJs+
UTG has 77+, ATo+, TJs+
We have a bad hand vs QQ+, AK.

UTG has QQ+, AK.
Levels of Thinking

• You want to be exactly one level above your opponents

• L0 – Not reading/indifference to hand value

• L1 – What cards do I have? Hand Reading

• L2 – What cards does he have? Opponent Reading

• L3 – What cards does he think I have? Representation
Annette Obrestad

- Annette
  - One of the best poker players from Norway
  - Youngest player to win WSOP bracelet @ 18 yrs
  - Started playing poker online @ 15 yrs with screen name Annette_15

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Annette Obrestad Interview

Mismatched Levels of Thinking

• “The Fourth Raise Means Aces”

Mismatched Levels of Thinking

• “The Fourth Raise is Aces”
Mismatched Levels of Thinking

• “The Fourth Raise is Aces”

Phil Ivey

vs

Level 1 Thinking Player
Mismatched Levels of Thinking

• Thinking on Level 3 ("What am I representing?") when opponent isn’t trying to read you (Not Level 2)
Mismatched Levels of Thinking

Villain (LP): $2000  Blinds 25/50
Hero (BTN): $2000

Pre Flop: ($75) Hero is BTN with $\text{K}\clubsuit\text{J}\clubsuit$
Villain calls $50$, Hero raises $200$ to $250$, Villain calls

Flop: ($575$) $7\spadesuit\text{T}\spadesuit\text{3}\spadesuit$ (2 players)
Villain bets $200$, Hero raises $400$ to $600$, Villain raises $1150$ to $2000$ and is all-in
Mismatched Levels of Thinking

Flop: ($575) 7♣ T♣ 3♣ (2 players)
Villain bets $200, Hero raises $400 to $600, Villain raises $1150 to $2000 and is all-in

Weak Player Ranges
JJ+
AT
TT, 77, 33
T7, T3, 73
Any two ♣

Strong Player Ranges
A♣X♣
Maybe TT
Levels of Thinking

• One of your first “reads” will be whether a person is a good or bad player
• Any one player may jump around +/- 1 level depending on the hand
  – e.g. some might be good at preflop opponent reading, but will focus on own hand on flop (btw L1 and L2)
  – e.g. some might think a low flush is good, but won’t think low pair is good (btw L0 and L1)
• A reasonable assumption is that new players are L1, average tournament players are L2, and cash game players are L3
Example of Level 5 thinking

- For players that are familiar with each other there’s a race to a higher level to dominate one-another
- This is more common in cash games, but this example is from a tournament
Example of Level 5 thinking

## Strong vs Weak Treadmill

<table>
<thead>
<tr>
<th>Actual Hand</th>
<th>Represented Hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 (reading)</td>
<td>Strong</td>
</tr>
<tr>
<td>Level 3 (representation)</td>
<td>Strong</td>
</tr>
<tr>
<td>Level 5</td>
<td>Strong</td>
</tr>
<tr>
<td>Level 7</td>
<td>Strong</td>
</tr>
</tbody>
</table>
Why are we learning about levels of thinking?

• My recommendations for flop, turn, river play assumes or opponents are average players
  – Capable of doing basic opponent reading
• This strategy isn’t optimal against very new players
• This strategy is probably losing to pros
• It’s at least enough to beat low-stakes games
Flop, Turn, River Play

- Psychology – Levels of Thinking
- Medium Stack Play (M > 10)
- Psychology (Tells and Other Concepts)
Flop, Turn, River Play

• The basic idea will be to provide the value of different hands during each stage and to recommend betting aggressively

• Standard bets are $3BB + 1BB$ for each previous caller preflop

• Flop-turn-river bets should be around $2/3$ of the pot to discourage draws

• This is only good for $M > 10$

• For $M < 10$, this will be reviews in the “Pre-flop” lecture later

• For $M > 30$, I recommend very conservative play
Pre-flop Play

• Hands are ranked based on the likelihood of flopping a winning hand

• Position impacts the strength of hands materially because many hands will be winners in late position but losers in early position

• The tiers are roughly correlated with Sklansky-Karlson rankings

• The ranking is generally going to come out of Harrington on Hold Em
Pre-flop Play

- You will enter few pots, but will generally be ahead when you play
- You will have easy decisions on the flop, since you will either hit or miss them completely
- You will win medium-size pots, but not huge ones
- Any hand you play should be raised by you to $3 \times \text{BB} + 1$ per caller
  - This will be about 15% of hands
- In general, you’d like to be heads-up by the flop
# Pre-flop Play (Opening)

<table>
<thead>
<tr>
<th>Position</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blind and UTG/UTG+1</td>
<td>TT+, AQs+, AKo+</td>
</tr>
<tr>
<td>MP1 MP2 MP3</td>
<td>88+, AJ+, KQ+</td>
</tr>
<tr>
<td>LP CO BTN</td>
<td>77+, AxS, high suited connectors</td>
</tr>
</tbody>
</table>
Pre-flop Play (Facing a Raise)

<table>
<thead>
<tr>
<th>Position</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early or Middle Position</td>
<td>TT+ AQs+ AKo+</td>
</tr>
<tr>
<td>LP CO BTN</td>
<td>88+ AJ+ KQ+</td>
</tr>
</tbody>
</table>
Flop Play

- Any hand where you were the aggressor pre-flop should be c-bet on the flop with a 2/3rd pot bet
  - This needs to work about 40% of the time to be profitable
  - We don’t vary the size to avoid exploitation

- Any hand that isn’t TPGK or better is considered a drawing hand and can be treated that way
  - So you can semi-bluff or call with good pot odds
# Flop Play

<table>
<thead>
<tr>
<th>Tier</th>
<th>Hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>K-high flush, top straight (unpaired board)</td>
</tr>
<tr>
<td>Tier 1</td>
<td>Top two sets, full house</td>
</tr>
<tr>
<td>Tier 2</td>
<td>A-high flush, top straight (paired board)</td>
</tr>
<tr>
<td>Tier 2</td>
<td>T-high flush, 2(^{nd}) straight (unpaired board)</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Bottom set, any two pair</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Overpair, Top-Pair Good-Kicker</td>
</tr>
<tr>
<td>Drawing</td>
<td>Top-Pair Bad Kicker</td>
</tr>
<tr>
<td></td>
<td>Mid or Bottom Pair, Pocket Pair</td>
</tr>
<tr>
<td></td>
<td>4-flush, straight draw</td>
</tr>
</tbody>
</table>
Turn/River Play

• By the Turn, the pot will be about 10M
• Use hand ranges to get an idea of your hand value
  – i.e. what hands could fit his action so far and still beat you
Reading hand ranges

• After pre-flop, you should have a reasonable idea of your opponents range

• Each decision lets you eliminate some of those hands to give you a better idea of your position

• A story that “doesn’t make sense” could be a bluff

• But in general, the chance of a “complete bluff” is negligible
Reading hand ranges
22+, JT+

88-JJ
78+, AQ-
99-JJ, 79, T9
88-JJ, KJ+, AK
99-JJ, 79, T9
88-JJ, KJ+, AQ
Reading hand ranges
Hero dealt [Ah;Kh]
22+, JT+

88-JJ
78+, AQ-
Levels of Thinking

T5, 55, TT, AT
Low flush
88-JJ, KJ+, AQ

22+, JT+

T5, 55, TT, AT
Low flush
88-JJ, KJ+, AQ

Villain calls 70$
Levels of Thinking

22+, JT+

T5, 55, TT, AT
Low flush
88-JJ, KJ+, AQ
Zeebo’s Theorem

• “No player is capable of folding a full house on any betting round, regardless of the size of the bet.”
Hero: wins 4015 from the main pot with Four of a kind, kings

Villain shows [Qs;Ts]
Flop, Turn, River Play

- Psychology – Levels of Thinking
- Medium Stack Play (M > 10)
- Psychology (Tells and Other Concepts)
Mike Caro

- Mike Caro
  - One of the first poker theorists
  - Author *Caro’s Book of Poker Tells*
  - Advocate for 4-color decks
  - Developed early poker AI, Orac

Psychological Concepts

• Fundamental Concepts
  – Goal is to make +EV decisions
  – Results of individual session or hand doesn’t matter

• Image
  – Organization and makeup of chip stack suggests play style
  – Advertisement – opponent remember shown hands
  – Preferred LAG when blinds are small, TAG when blinds are high

• Manipulation
  – Opponents want to call or want to fold, depending on the person
  – Don't be afraid to loosen up the table
Long run concepts

- What you’ve already invested doesn’t matter
- Cards won’t breakeven in long run
- Threshold of Misery – players often lose the most money immediately after losing more than they planned
- Don’t try to prove you are the best; this isn’t basketball
Fears and tilt

• Showing down bad hands
• Losing money
• Playing short sessions while ahead and long sessions while behind
Techniques for stabilizing

• Mark your bankroll to market

• Don’t forget poker’s most important secret. The secret is simply, “Play your best game all the time.”

• Don’t think about streaks, think about breakeven periods

• Have a short memory for hands - this is easier online
Bubble Play

• Bubble
  – Generally 10% or so of the field away from the money
  – Average amateur players are way too tight
  – Arguably your performance here determines how deep you finish
  – Use ICM in marginal spots

• Two types of metagame
  – Traditionally bubble is very passive
  – More recently bubble is too aggressive
Independent Chip Model (ICM)

- The ICM is used to convert cEV to $EV in tournaments
- It’s based on likelihood of ending up in certain payout spots
- As of now, it can only be solved algorithmically
- Just intuitively,
  - When winner-takes-all, cEV is close to $EV
  - When payouts are flat, cEV is far from $EV
  - With big changes in cEV, $EV moves are not symmetrical
    - Losing hurts more than winning
ICM Example

<table>
<thead>
<tr>
<th>Player</th>
<th>Chips</th>
<th>Finish</th>
<th>Payout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam</td>
<td>2500</td>
<td>1st</td>
<td>$1000</td>
</tr>
<tr>
<td>Bob</td>
<td>2500</td>
<td>2\textsuperscript{nd}</td>
<td>$600</td>
</tr>
<tr>
<td>Charlie</td>
<td>2500</td>
<td>3\textsuperscript{rd}</td>
<td>$400</td>
</tr>
<tr>
<td>David</td>
<td>2500</td>
<td>4th</td>
<td>$0</td>
</tr>
</tbody>
</table>
## ICM Example

<table>
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<tr>
<th>Player</th>
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<tbody>
<tr>
<td>Adam</td>
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<tbody>
<tr>
<td>Adam</td>
<td>5000</td>
<td>$766</td>
</tr>
<tr>
<td>Bob</td>
<td>2500</td>
<td>$616</td>
</tr>
<tr>
<td>Charlie</td>
<td>2500</td>
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<tbody>
<tr>
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<td>$1000</td>
<td>+$400</td>
</tr>
<tr>
<td>2nd</td>
<td>$600</td>
<td>+$200</td>
</tr>
<tr>
<td>3rd</td>
<td>$400</td>
<td></td>
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<td>$0</td>
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The Winner (Who has all the chips in the end) “gives up” equity to those knocked out before him.
ICM Example

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<th>Finish</th>
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</tr>
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<tbody>
<tr>
<td>1st</td>
<td>$2000</td>
<td>+$2000</td>
</tr>
<tr>
<td>2nd</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
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The Winner (Who has all the chips in the end) “gives up” equity to those knocked out before him
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<tbody>
<tr>
<td>Adam</td>
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<td>$9000</td>
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<tr>
<td>Bob</td>
<td>2500</td>
<td>$9000</td>
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<tr>
<td>Charlie</td>
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<td>$9000</td>
</tr>
<tr>
<td>David</td>
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<td>$9000</td>
</tr>
<tr>
<td>Elaine</td>
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<td>$9000</td>
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<tr>
<td>Fred</td>
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<tr>
<td>George</td>
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</tr>
<tr>
<td>Hannah</td>
<td>2500</td>
<td>$9000</td>
</tr>
<tr>
<td>Irene</td>
<td>2500</td>
<td>$9000</td>
</tr>
<tr>
<td>Jessica</td>
<td>2500</td>
<td>$9000</td>
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</table>

<table>
<thead>
<tr>
<th>Finish</th>
<th>Payout</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st - 9th</td>
<td>$10000</td>
</tr>
<tr>
<td>10th</td>
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</tr>
</tbody>
</table>

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Massachusetts Institute of Technology
ICM Example (WSOP Satellite)

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<thead>
<tr>
<th>Player</th>
<th>Chips</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irene</td>
<td>2500</td>
<td>$9000</td>
</tr>
<tr>
<td>Jessica (Hero)</td>
<td>2500</td>
<td>$9000</td>
</tr>
</tbody>
</table>

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<td>$0</td>
</tr>
</tbody>
</table>

Blinds 200/400
Irene raises 2100 to 2500
Jessica dealt K♦K♥
Jessica…
ICM Example (WSOP Satellite)

<table>
<thead>
<tr>
<th>Player</th>
<th>Chips</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irene</td>
<td>2500</td>
<td>$9000</td>
</tr>
<tr>
<td>Jessica (Hero)</td>
<td>2500</td>
<td>$9000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finish</th>
<th>Payout</th>
</tr>
</thead>
<tbody>
<tr>
<td>1\textsuperscript{st} - 9\textsuperscript{th}</td>
<td>$10000</td>
</tr>
<tr>
<td>10\textsuperscript{th}</td>
<td>$0</td>
</tr>
</tbody>
</table>

Blinds 200/400
Irene raises 2100 to 2500
Jessica dealt K♥K♦
Jessica…
KK vs ATC = 82%
cEquity = 82% * 5000 + 18% * 0 = 4100  cEV = 1600
$Equity = 82% * $10000 + 18% * 0 = $8200  $EV = -$800
Tournament Life Cycle

The most important tournament concept is tempo.

• Early Game
• Bubble and Early Cashes
• Late Game/Final Table
Late Game

• Don’t be overwhelmed by stakes, play it like a single-table tournament

• Continue to steal/re-steal as appropriate

• Be conscious of ICM
  – Know the marginal payouts of positions

• Exploit players who are under bankrolled
Tournaments

- Tournament Life Cycle
  - Flop Turn River Play
  - Psychology
- Bankroll Management
- PokerStars Prize League Results
Bankroll Management

• What is a bankroll?
  – Generally “the amount of money you devote to poker investments”
  – More specifically, it’s the amount of money that you would deem “irrecoverable” if lost and would force you to stop playing poker
  – This only matters for winning players
  – Some examples:
    • For new players: “A large amount of money”
    • For amateurs: Expendable cash available, not in investments
    • For pros: Expendable cash and capacity to borrow
Bankroll Management Rules

• Rules of Thumb
  – based off a 2% chance of going broke (Risk of Ruin)
  – uses average stakes/buy ins
  – does not assume natural increase/decrease in stakes

• Assumes Solid Winning Play and Typical Variance

• Bankroll recommended for each game
  – Cash Games
    • NL – 20 Max Buy-ins
    • Limit – 300 Big Bets
  – Tournaments
    • Single Table Tournaments – 30 Entries
    • Multi-Table Tournaments – 50 - 100 Entries
Bankroll Management Theory

- Kelly Criterion
  - If your utility curve is logarithmic
  - Maximize utility by betting with regard to edge
  - For example, in a biased coin game, if you are 60% to win, you should risk 20% of your bankroll (60%-40%) on that bet
  - This is the fundamental basis of bet-sizing in BlackJack
Bankroll Management in WSOP

- WSOP has one of the biggest tournament fields with 6000+ entries
- The buy-in is large at $10,000, even among MTT pros
- The appropriate bankroll for this would be over $1,000,000
- Compared to equivalent $1,000,000 investments, playing one hundred WSOP main events has terrible risk-adjusted returns

- WSOP has the softest field of any $10,000 tournament
- Placing deep in the WSOP has publicity upsides in addition to winnings
Risk Management

• Staking and Investment
  – Using the WSOP as an example, a good winning player might have a $EV of +$5000 (+50% roi), with a huge variance
  – Investors with appropriate risk preferences can eat the variance in return for a portion of the winnings
  – Common deal is 50% of upside + 100% of losses
  – This is an equity investment

• Selling Shares and Trading Percentages
  – Almost universally, pros will trade percentages of their play in big events with other pros
  – In addition, players might sell single-tournament shares to individuals to split their play into 10 smaller chunks at 10% markup
Other Considerations

- Counterparty Risk
- Lifestyle
- Current Poker Environment
- Game Selection
**Tournaments**

- Tournament Life Cycle
  - Flop Turn River Play
  - Psychology
- Bankroll Management
- PokerStars Prize League Results
<table>
<thead>
<tr>
<th>Rank</th>
<th>Player</th>
<th>Games</th>
<th>Points</th>
<th>Average</th>
<th>KO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>McSmith/MIT</td>
<td>64</td>
<td>94.79</td>
<td>1.48</td>
<td>94.5</td>
</tr>
<tr>
<td>2</td>
<td>JZhao/MIT</td>
<td>63</td>
<td>89.39</td>
<td>1.42</td>
<td>139.5</td>
</tr>
<tr>
<td>3</td>
<td>Rao/MIT</td>
<td>66</td>
<td>84.99</td>
<td>1.29</td>
<td>69.5</td>
</tr>
<tr>
<td>4</td>
<td>ArjunN/MIT</td>
<td>72</td>
<td>83.5</td>
<td>1.16</td>
<td>35.8</td>
</tr>
<tr>
<td>5</td>
<td>Amereno/MIT</td>
<td>51</td>
<td>77.56</td>
<td>1.52</td>
<td>90.5</td>
</tr>
<tr>
<td>6</td>
<td>mwymer/MIT</td>
<td>54</td>
<td>70.33</td>
<td>1.3</td>
<td>54.5</td>
</tr>
<tr>
<td>7</td>
<td>Shields/MIT</td>
<td>47</td>
<td>67.48</td>
<td>1.44</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>ChenGu/MIT</td>
<td>70</td>
<td>62.49</td>
<td>0.89</td>
<td>35</td>
</tr>
<tr>
<td>9</td>
<td>Subashki/MIT</td>
<td>55</td>
<td>57.8</td>
<td>1.05</td>
<td>62</td>
</tr>
<tr>
<td>10</td>
<td>Harris/MIT</td>
<td>46</td>
<td>56.46</td>
<td>1.23</td>
<td>49</td>
</tr>
<tr>
<td>11</td>
<td>Hilton/MIT</td>
<td>52</td>
<td>55.17</td>
<td>1.06</td>
<td>100</td>
</tr>
<tr>
<td>12</td>
<td>wtareid/MIT</td>
<td>55</td>
<td>53.7</td>
<td>0.98</td>
<td>66</td>
</tr>
<tr>
<td>13</td>
<td>Mannes/MIT</td>
<td>36</td>
<td>53.02</td>
<td>1.47</td>
<td>54</td>
</tr>
<tr>
<td>14</td>
<td>YKato/MIT</td>
<td>30</td>
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<td>1.76</td>
<td>55</td>
</tr>
<tr>
<td>15</td>
<td>AMoran/MIT</td>
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<td>52.27</td>
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<td>82</td>
</tr>
<tr>
<td>16</td>
<td>Wang/MIT</td>
<td>46</td>
<td>52.17</td>
<td>1.13</td>
<td>43.5</td>
</tr>
<tr>
<td>17</td>
<td>Liu/MIT</td>
<td>61</td>
<td>51.97</td>
<td>0.85</td>
<td>38</td>
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<tr>
<td>18</td>
<td>JKramer/MIT</td>
<td>42</td>
<td>51.94</td>
<td>1.24</td>
<td>23.5</td>
</tr>
<tr>
<td>19</td>
<td>DMa/MIT</td>
<td>54</td>
<td>50.95</td>
<td>0.94</td>
<td>40</td>
</tr>
</tbody>
</table>

* Points are only awarded in tournaments with four or more players.
## Final Standings

<table>
<thead>
<tr>
<th>Prize Order</th>
<th>Player</th>
<th>Points</th>
<th>PPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YKato_MIT</td>
<td>52.81</td>
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## Final Standings (continued)

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</tbody>
</table>
Prizes

• An iPad Mini from Jane Street
• A GoPro from Citadel
• Private coaching from Will Ma
• Kindle Paperwhite and $100 Amazon Gift Card from Prismata
• A customized poker chip set from SIG
• Lots of books
An iPad Mini from Jane Street

iPad mini Wi-Fi 16GB Silver
“Best of Skill!”

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Jane Street™

Quant trading firm, based in NYC
Major player in the HFT market
A GoPro from Citadel

GoPro Hero3 - White Edition

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CITADEL™

Multi-Strategy Hedge Fund, based in NYC
$25 Billion AUM
Private Coaching from Will Ma

• One Hour Coaching Donated

• Will is a CardRunners.com Professional Poker Coach

• $1 Million+ in Career Tournament Winnings
Kindle Paperwhite from Prismata

Kindle Paperwhite WiFi
+$100 Amazon Gift Card

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TM

prismata

Turn-based strategy card game
Developed by Will Ma + Lunarch Studios
A poker chip set from SIG

300-piece Diamond Suited 12.5g Chips
Metal Case and Chips Engraved with SIG

Image is in the public domain.
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SIG
SUSQUEHANNA
Trading Firm, based in Philadelphia
Founded by Poker Players

MIT
Massachusetts Institute of Technology

Tendler, J. and B. Carter:


**Books**

Closing Remarks

• Great Class Overall
• Fantastic Support from MIT and from Sponsors
• Competitive Online League
• High Quality Guest Speakers
15.S50 Poker Theory and Analytics
January IAP 2015

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