Acceleration in the NBA: Towards an Algorithmic Taxonomy of Basketball Plays

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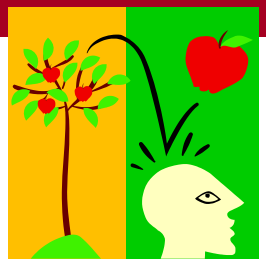
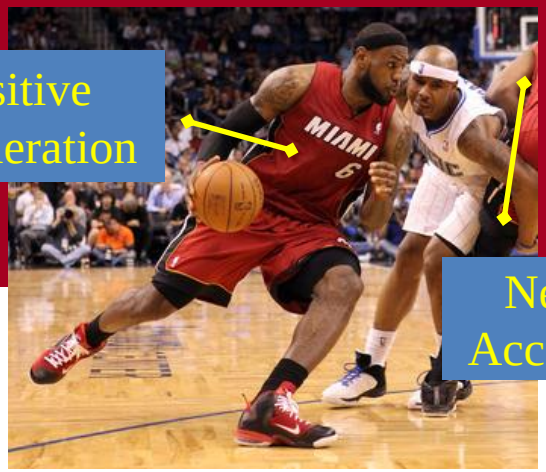
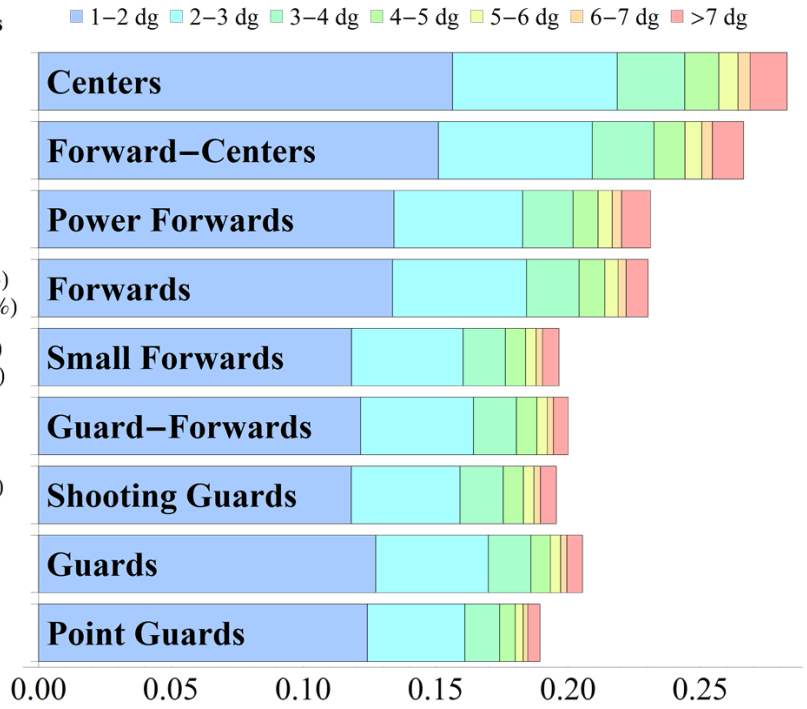
Acceleration

10 dg = 1 g





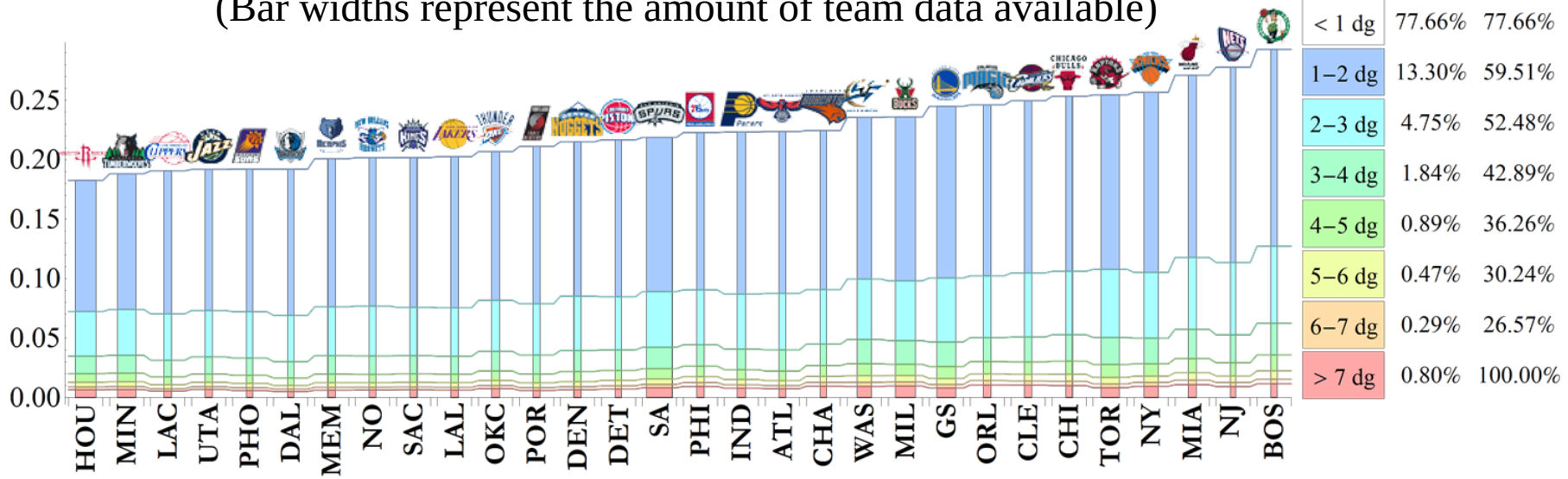
	Frequent Accelerators	Infrequent Accelerators
	Solomon Alabi (41.98%) Tyson Chandler (35.05%)	Marcus Camby (18.46%) Marc Gasol (22.39%)
	Joel Anthony (36.90%) Andrea Bargnani (34.90%)	Troy Murphy (17.81%) Tyrus Thomas (18.57%)
	Kris Humphries (32.41%) Taj Gibson (31.12%)	Marcus Morris (12.05%) Matt Bonner (14.74%)
	Carmelo Anthony (34.34%) LeBron James (32.27%)	Bobby Simmons (12.02%) Chandler Parsons (12.96%)
	Paul Pierce (29.06%) Kevin Durant (26.20%)	Chase Budinger (11.02%) Danilo Gallinari (15.69%)
	J.R. Smith (30.03%) Gary Forbes (27.94%)	Courtney Lee (10.43%) Danny Green (13.45%)
	Kobe Bryant (26.82%) Ray Allen (25.56%)	Shannon Brown (13.64%) Daequan Cook (14.84%)
	Toney Douglas (28.60%) Dwyane Wade (27.72%)	Gary Neal (14.38%) Daniel Gibson (14.55%)
	Deron Williams (33.36%) Baron Davis (26.85%)	Derek Fisher (12.52%) Kyle Lowry (13.54%)



Frequency of Acceleration

Frequencies of Acceleration by Team for 2011-2012

(Bar widths represent the amount of team data available)



Frequencies	overall	remaining
< 1 dg	77.66%	77.66%
1–2 dg	13.30%	59.51%
2–3 dg	4.75%	52.48%
3–4 dg	1.84%	42.89%
4–5 dg	0.89%	36.26%
5–6 dg	0.47%	30.24%
6–7 dg	0.29%	26.57%
> 7 dg	0.80%	100.00%

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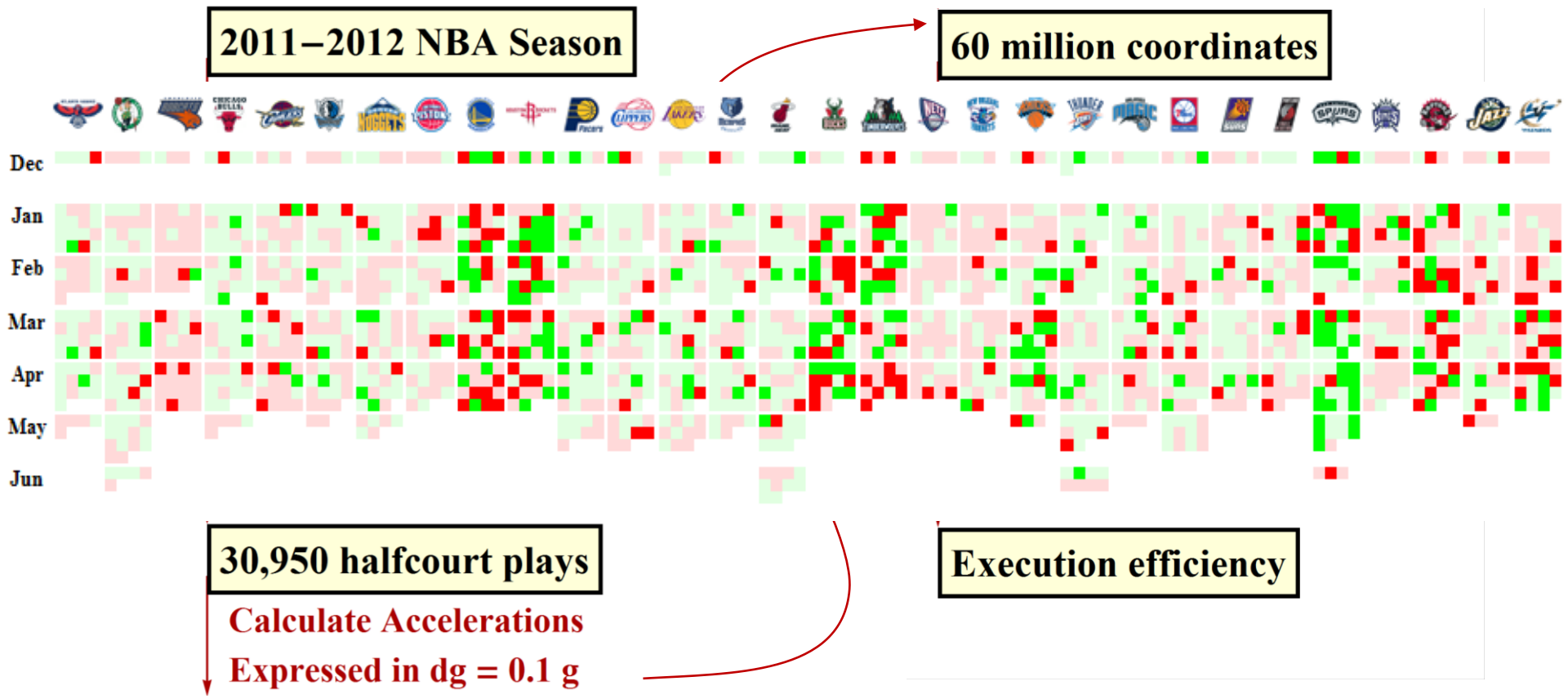
Data and Methodology



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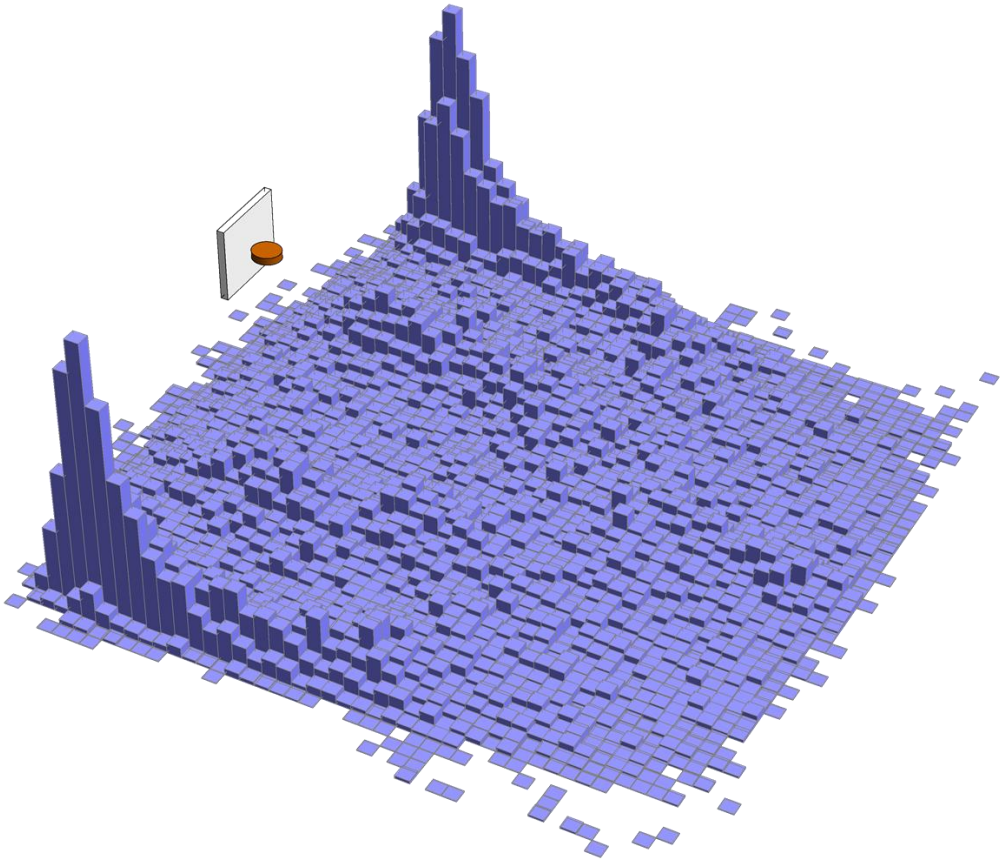
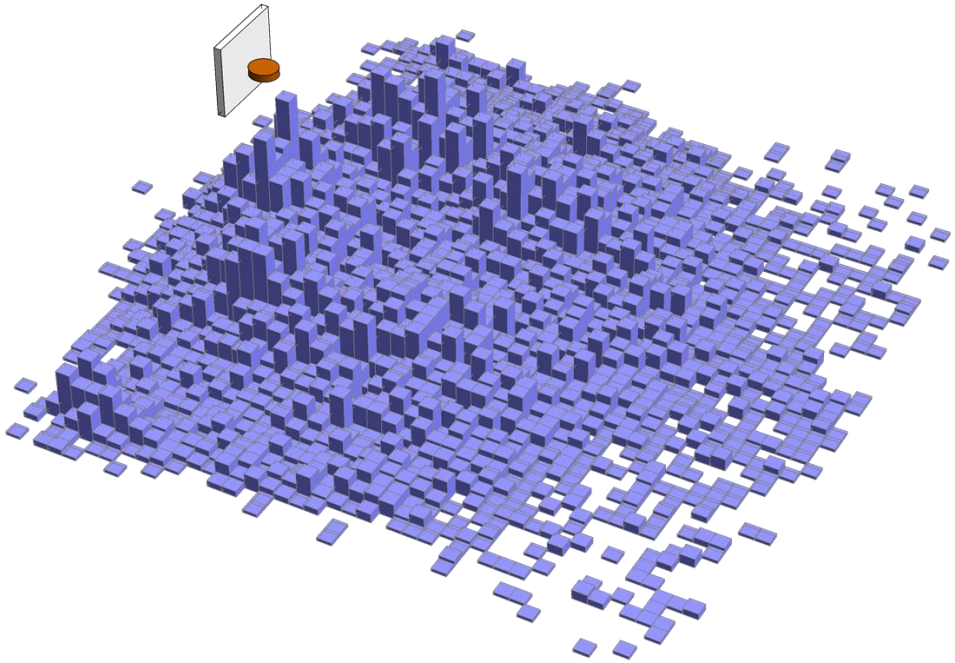
Histogram of Player Positions

All Locations (Acceleration ≥ 0 dg)

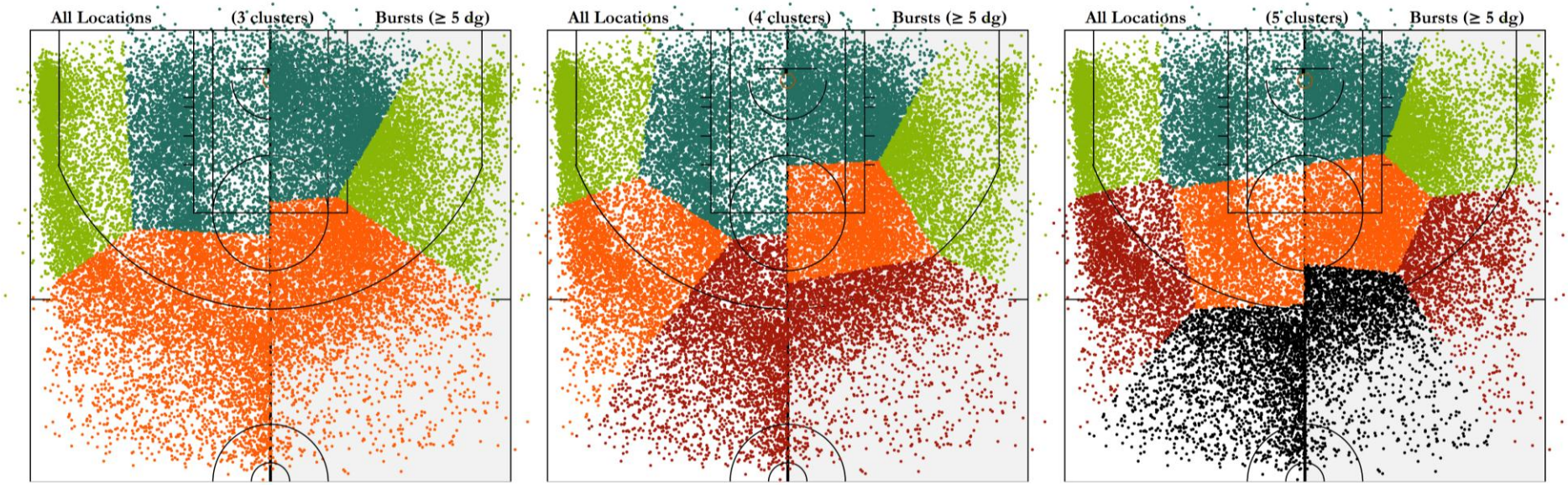


Histogram of Player Positions

Burst Locations (Acceleration ≥ 5 dg)



Cluster Analysis of Player Positions



Key Spots	Left	Right
Paint	LP	RP
Key	LK	RK
Wing	LW	RW

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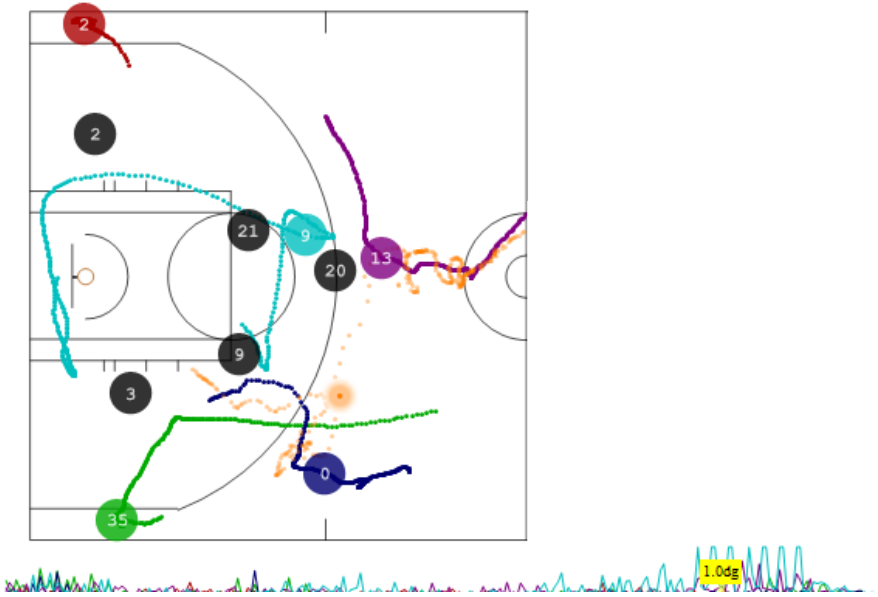
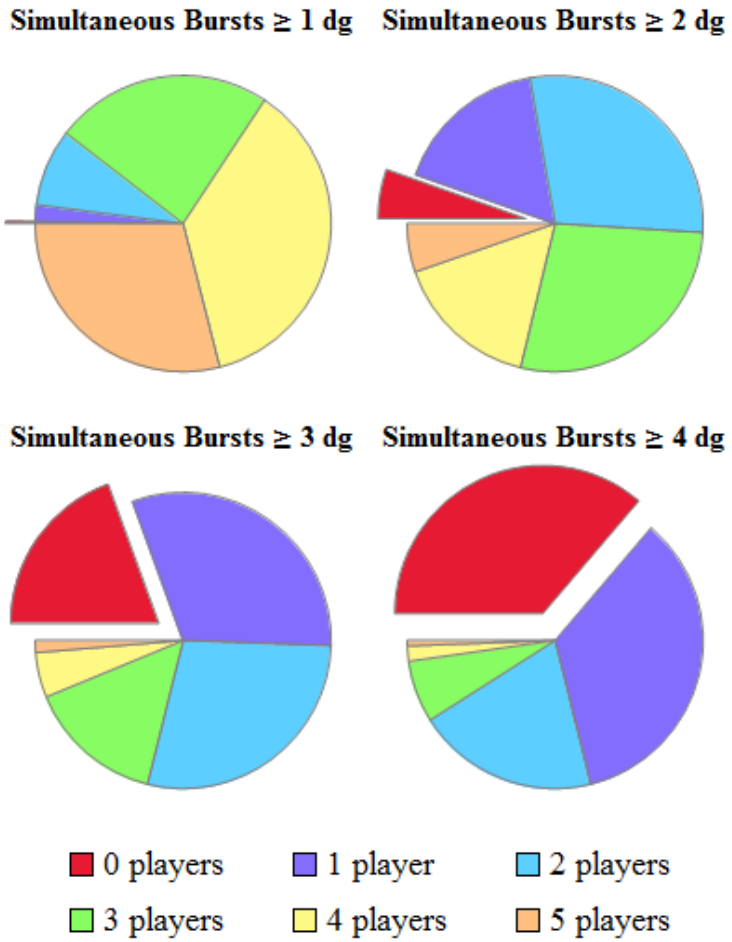
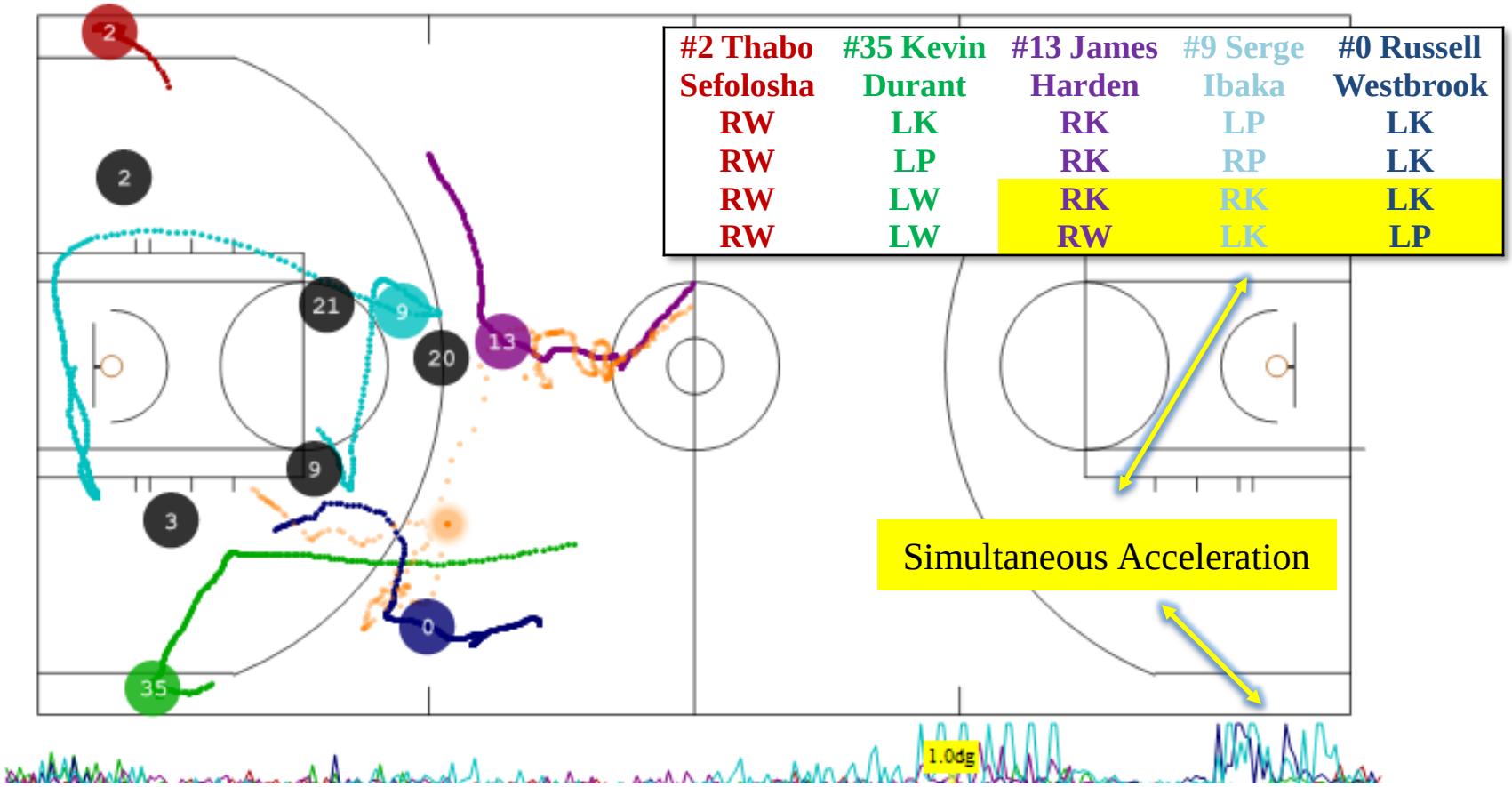
Simultaneous Accelerations





2012 WCF Game 5 OKC@SA
Q4 1:49-1:36



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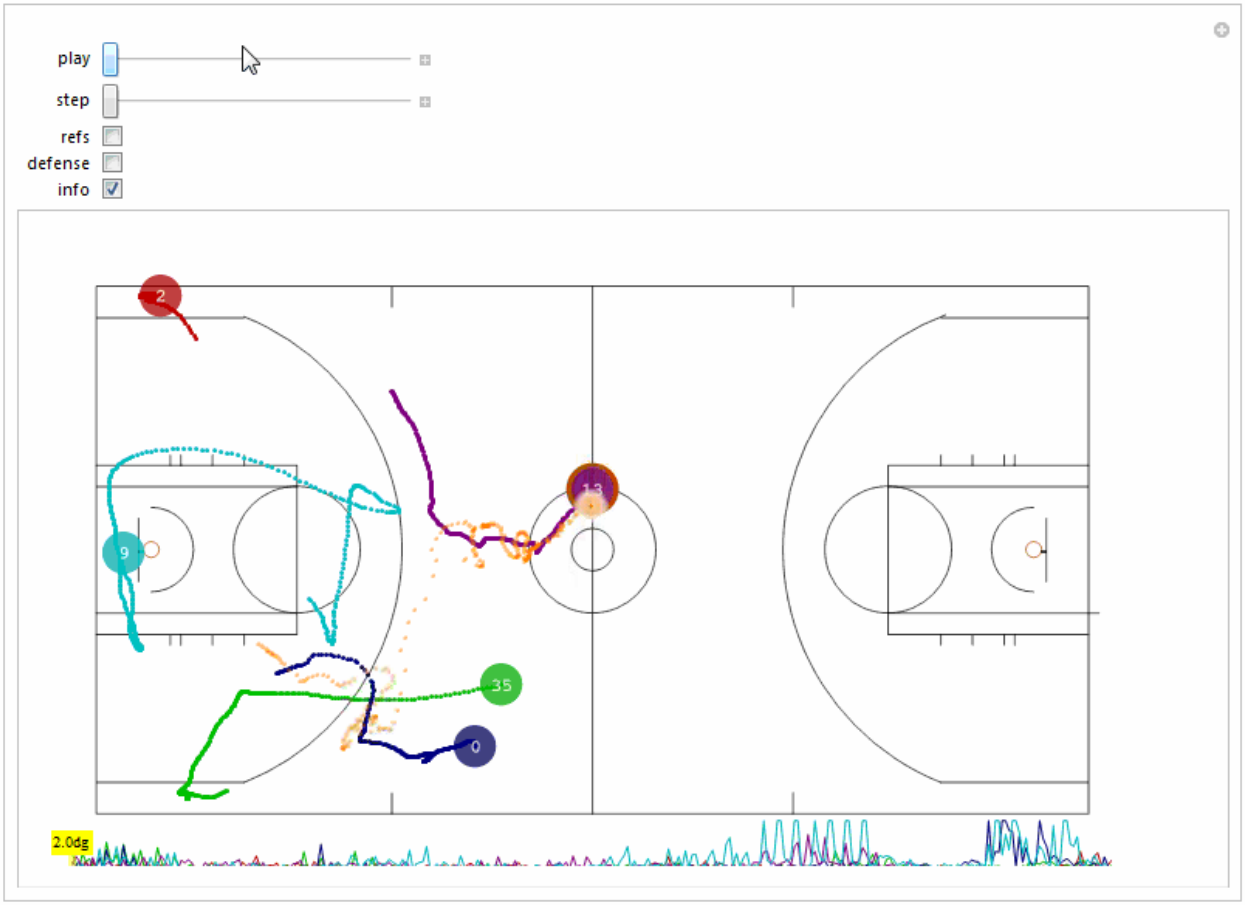
Interactivity



Future Research

- Acceleration and offensive execution
  - E.g.: shooting percentage or point scored vs.
    - Acceleration frequencies
    - Acceleration locations
    - Acceleration simultaneity
- Acceleration and winning
  - Team averages on offense and defense
- Acceleration and health/injuries