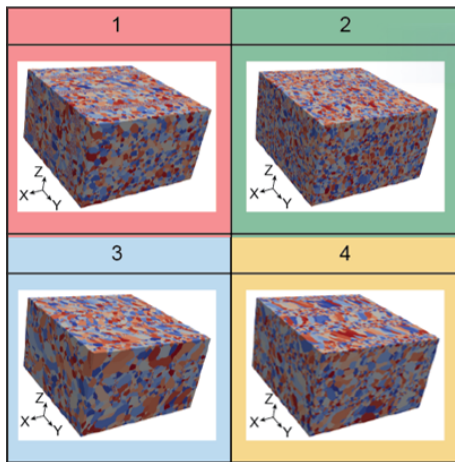


# Extraction of Process-Structure Linkages Using a Data Science Approach

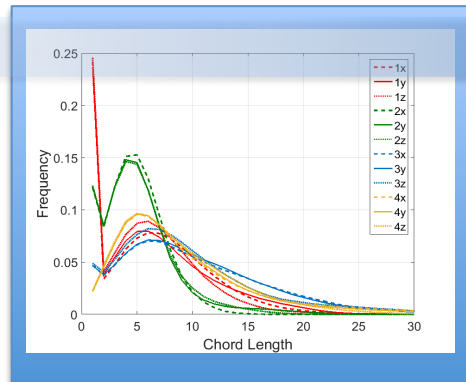
## SYNTHETIC ADDITIVE MANUFACTURING MICROSTRUCTURE CREATION



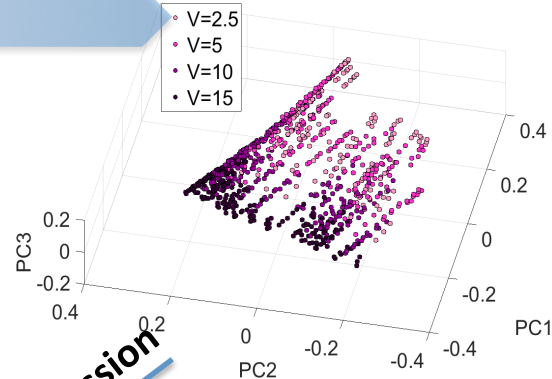
	1	2	3	4
X/Y	X	X	XY	XY
W	60	80	70	90
V	5	15	5	7.5
D	100	100	125	125
L	50	60	60	70
HAZ	5	5	20	35
T	5	20	20	35

## ADDITIVE MANUFACTURING PROCESSING PARAMETERS

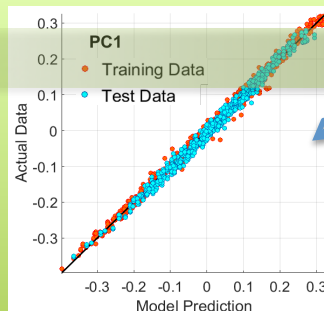
## MEASURED CHORD LENGTH DISTRIBUTIONS



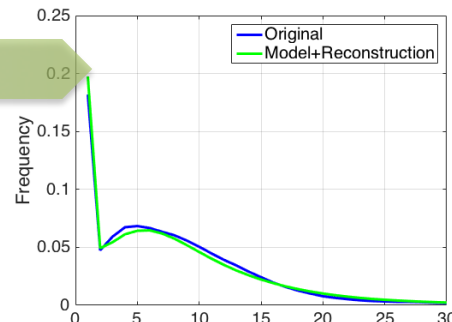
## PRINCIPLE COMPONENT ANANLYSIS



input



output



## PROCESSING PARAMETER DRIVEN DATA MODEL $PC_i = f(W, V, D, L, HAZ, T)$

## DATA MODEL VS. SIMULATION