Feature name

1-trading-days-lookback_NBBO-hist-trades_50%-quantile-shares-per-trade_shares

1-trading-days-lookback NBBO-hist-trades 75%-quantile-shares-per-trade shares

5-trading-days-lookback_NBBO-hist-trades_100%-quantile-shares-per-trade_shares

1-trading-days-lookback_MELO-hist-orders_buy-over-total-orders_proportion

1-trading-days-lookback MELO-hist-orders buy-shares-over-total-shares-orders proportion

5-trading-days-lookback MELO-hist-orders buy-over-total-orders proportion

5-trading-days-lookback_MELO-hist-orders_buy-shares-over-total-shares-orders_proportion

 $5\text{-}trading\text{-}days\text{-}lookback_MELO\text{-}hist\text{-}orders_unique\text{-}firms\text{-}buy\text{-}orders_count}$

1-trading-days-lookback_NBBO-hist-price_average-bam_price

1-trading-days-lookback NBBO-hist-price skewness-bam price

5-trading-days-lookback_NBBO-hist-price_average-bam_price

1-trading-days-lookback_NBBO-hist-trades_average-shares-per-trade_shares

5-trading-days-lookback_NBBO-hist-trades_75%-quantile-shares-per-trade_shares

5-trading-days-lookback_NBBO-hist-trades_average-shares-per-trade_shares

last step incl lookback SELL trade gtv sum

last_step_incl_lookback_SELL_trade_qty_skew

last_3step_incl_lookback_SELL_trade_qty_skew

last 10 min incl lookback BUY trade atv kurtosis

last_10_min_incl_lookback_BUY_trade_qty_skew

last 10 min incl lookback SELL trade atv min

last_10_min_incl_lookback_SELL_trade_qty_skew

last_30_min_incl_lookback_BUY_trade_qty_kurtosis

last_30_min_incl_lookback_BUY_trade_qty_skew

bids left in book

1-trading-days-lookback MELO-hist-orders unique-firms-total-orders count

5-trading-days-lookback_NBBO-hist-price_max-bam-minus-min-bam_price

1-trading-days-lookback_NBBO-hist-trades_25%-quantile-shares-per-trade_shares

1-trading-days-lookback_NBBO-hist-trades_100%-quantile-shares-per-trade_shares

5-trading-days-lookback_NBBO-hist-trades_50%-quantile-shares-per-trade_shares

step_MO_baseline_A

step MO baseline AT

step_MO_action_AT

step_MO_synthetic_AT

step_MO_action_minus_synthetic_AT

step_MO_action_A

step_MO_synthetic_A

step_MO_action_minus_synthetic_A

BUY_trade_qty_std

BUY_trade_qty_min

BUY_trade_qty_max

 $BUY_bam_time_of_trade_mean$

BUY_bam_time_of_trade_std

BUY_bam_time_of_trade_min

BUY_bam_time_of_trade_max

BUY_signed_markout_1000ms_bps_mean

BUY_signed_markout_1000ms_bps_min

SELL trade gtv mean

SELL_trade_qty_min

SELL_trade_qty_max

SELL_bam_time_of_trade_mean SELL_bam_time_of_trade_std

SELL_bam_time_of_trade_min

SELL bam time of trade max

SELL_signed_markout_1000ms_bps_mean

SELL_signed_markout_1000ms_bps_min

SELL_signed_markout_1000ms_bps_max last_step_incl_lookback_BUY_trade_qty_sum

last step incl lookback BUY trade gty min

last_step_incl_lookback_BUY_trade_qty_max

last_step_incl_lookback_BUY_trade_qty_mean

last_step_incl_lookback_BUY_trade_qty_stdev

last_step_incl_lookback_BUY_trade_qty_skew

last_step_incl_lookback_SELL_trade_qty_min

last_step_incl_lookback_SELL_trade_qty_max

last step incl lookback SELL trade gtv mean

last_step_incl_lookback_SELL_trade_qty_stdev

last_step_incl_lookback_SELL_trade_qty_kurtosis

last_3step_incl_lookback_BUY_trade_qty_sum

last_3step_incl_lookback_BUY_trade_qty_min last 3step incl lookback BUY trade gty max

50th quantile of tradevolume over the last 1 day

75th quantile of tradevolume over the last 1 day

100th quantile of tradevolume over the last 5 days Current prevailing timer as determined by the Al system

(Sum of BUY orders for M-ELO over the last 1 day) / (Total sum of ALL orders for M-ELO over the last 1 day)

(Sum of shares in BUY orders for M-ELO over the last 1 day)/ (Total sum of shares in ALL orders for M-ELO over the last 1 day)

(Sum of BUY orders for M-ELO over the last 5 day) / (Total sum of ALL orders for M-ELO over the last 5 day)

(Sum of shares in BUY orders for M-ELO over the last 5 day)/ (Total sum of shares in ALL orders for M-ELO over the last 5 day)

Number of unique firms that placed BUY SIDE orders on M-ELO for the last 5 days

Average bam (midpoint of NBBO) value over the last 1 day

skew of the bam (midpoint of NBBO) over the last 1 day Average bam (midpoint of NBBO) value over the last 5 days

Mean of tradevolume over the last 1 day

75th quantile of tradevolume over the last 5 days

Mean of tradevolume over the last 5 days

sum(sell # of shares per trade executed in the last 30 seconds)

skew(sell # of shares per trade executed in the last 30 seconds)

skew(sell # of shares per trade executed in the last 90 seconds)

kurtosis(buy # of shares per trade executed in the last 10 minutes)

skew(buy # of shares per trade executed in the last 10 minutes)

min(sell # of shares per trade executed in the last 10 minutes)

skew(sell # of shares per trade executed in the last 10 minutes)

kurtosis(buy # of shares per trade executed in the last 30 minutes)

skew(buy # of shares per trade executed in the last 30 minutes)

sum(eligible bid # shares per price level remaining in melo order book)

Number of unique firms that placed BUY OR SELL orders on M-ELO for the last 1 day

(Max bam (midpoint of NBBO) value over the last 5 days) - (min bam (midpoint of NBBO) value over the last 5 days)

25th quantile of tradevolume over the last 1 day

100th quantile of tradevolume over the last 1 day

50th quantile of tradevolume over the last 5 days

Sum of simulated trades action trade quantity / total sum of shares for all orders

Average of baseline simulated trades signed markout for 1000ms, weighted by trade quantity

Average of baseline simulated trades signed markout (for adder only) for 1000ms, weighted by trade quantity

Average of action simulated trades signed markout for 1000ms, weighted by trade quantity

Average of action simulated trades signed synthetic markout for 1000ms, weighted by trade quantity

Average of (action simulated trades signed markout - action simulated trades signed synthetic markout), weighted by trade quantity

Average of action simulated trades signed markout (for adder only) for 1000ms, weighted by trade quantity

Average of action simulated trades signed synthetic markout (for adder only) for 1000ms, weighted by trade quantity

Average of (action simulated trades signed markout (adder only) - action simulated trades signed synthetic markout (adder only)), weighted by trade quantity Standard deviation of buyside trades quantities

Minimum buyside trade quantity

Maximum buyside trade quantity

Simple average of buyside bam (midpoint of NBBO) time of trade

Standard deviation of buyside bam (midpoint of NBBO) time of trade

Minimum buyside bam (midpoint of NBBO) time of trade

Maximum buyside bam (midpoint of NBBO) time of trade

Simple average of buyside signed markout for 1000 ms

Minimum of buyside signed markout for 1000 ms

Simple average of sellside trades quantities Minimum sellside trade quantity

Maximum sellside trade quantity

Simple average of sellside bam (midpoint of NBBO) time of trade

Standard deviation of sellside bam (midpoint of NBBO) time of trade Minimum sellside bam (midpoint of NBBO) time of trade

Maximum sellside ham (midpoint of NRRO) time of trade

Simple average of sellside signed markout for 1000 ms

Minimum of sellside signed markout for 1000 ms Maximum of sellside signed markout for 1000 ms

sum(buy # of shares per trade executed in the last 30 seconds)

min(buy # of shares per trade executed in the last 30 seconds)

max(buy # of shares per trade executed in the last 30 seconds) mean(buy # of shares per trade executed in the last 30 seconds)

stdev(buy # of shares per trade executed in the last 30 seconds)

skew(buy # of shares per trade executed in the last 30 seconds)

min(sell # of shares per trade executed in the last 30 seconds) max(sell # of shares per trade executed in the last 30 seconds)

mean(sell # of shares per trade executed in the last 30 seconds)

stdev(sell # of shares per trade executed in the last 30 seconds)

kurtosis(sell # of shares per trade executed in the last 30 seconds) sum(buy # of shares per trade executed in the last 90 seconds)

min(buy # of shares per trade executed in the last 90 seconds) max(buy # of shares per trade executed in the last 90 seconds)

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SR-NASDAQ-2022-079 Exhibit 3B Amendment No. 1

last_3step_incl_lookback_BUY_trade_qty_mean last_3step_incl_lookback_BUY_trade_qty_stdev last_3step_incl_lookback_BUY_trade_qty_kurtosis last_3step_incl_lookback_BUY_trade_qty_skew last_3step_incl_lookback_SELL_trade_qty_sum last_3step_incl_lookback_SELL_trade_qty_min last 3step incl lookback SELL trade gtv max last_3step_incl_lookback_SELL_trade_qty_mean last_3step_incl_lookback_SELL_trade_qty_stdev last_3step_incl_lookback_SELL_trade_qty_kurtosis last_5_min_incl_lookback_BUY_trade_qty_sum last 5 min incl lookback BUY trade gtv min last_5_min_incl_lookback_BUY_trade_qty_max last 5 min incl lookback BUY trade gtv mean last_5_min_incl_lookback_BUY_trade_qty_stdev last_5_min_incl_lookback_BUY_trade_qty_kurtosis last 5 min incl lookback BUY trade gtv skew last_5_min_incl_lookback_SELL_trade_qty_sum last_5_min_incl_lookback_SELL_trade_qty_min last_5_min_incl_lookback_SELL_trade_qty_max last_5_min_incl_lookback_SELL_trade_qty_mean last_5_min_incl_lookback_SELL_trade_qty_stdev last_5_min_incl_lookback_SELL_trade_qty_kurtosis last_5_min_incl_lookback_SELL_trade_qty_skew last_10_min_incl_lookback_BUY_trade_qty_sum last 10 min incl lookback BUY trade atv min last 10 min_incl_lookback_BUY_trade_qty_mean last_10_min_incl_lookback_BUY_trade_qty_stdev last 10 min incl lookback SELL trade gtv sum last_10_min_incl_lookback_SELL_trade_qty_max last 10 min incl lookback SELL trade atv mean last_10_min_incl_lookback_SELL_trade_qty_kurtosis last_30_min_incl_lookback_BUY_trade_qty_sum last_30_min_incl_lookback_BUY_trade_qty_min last_30_min_incl_lookback_BUY_trade_qty_max last 30 min incl lookback BUY trade atv stdev last_30_min_incl_lookback_SELL_trade_qty_sum last_30_min_incl_lookback_SELL_trade_qty_min last_30_min_incl_lookback_SELL_trade_qty_max last_30_min_incl_lookback_SELL_trade_qty_mean last 30 min incl lookback SELL trade gtv stdev last_30_min_incl_lookback_SELL_trade_qty_kurtosis last_30_min_incl_lookback_SELL_trade_qty_skew 1-trading-days-lookback_MELO-hist-orders_unique-firms-buy-orders_count 1-trading-days-lookback_MELO-hist-orders_unique-firms-sell-orders_count 5-trading-days-lookback MELO-hist-orders unique-firms-total-orders count 1-trading-days-lookback_NBBO-hist-price_kurtosis-bam_price 1-trading-days-lookback_NBBO-hist-price_max-spread-bam_price 5-trading-days-lookback_NBBO-hist-price_kurtosis-bam_price 5-trading-days-lookback_NBBO-hist-price_max-spread-bam_price 5-trading-days-lookback_NBBO-hist-price_skewness-bam_price 1-trading-days-lookback_NBBO-hist-trades_sum-all-shares-traded_shares 1-trading-days-lookback_NBBO-hist-trades_0%-quantile-shares-per-trade_shares 5-trading-days-lookback NBBO-hist-trades sum-all-shares-traded shares 5-trading-days-lookback_NBBO-hist-trades_25%-quantile-shares-per-trade_shares BUY_trade_qty_mean BUY signed markout 1000ms bps std BUY_signed_markout_1000ms_bps_max SELL trade atv std SELL_signed_markout_1000ms_bps_std last_step_incl_lookback_BUY_trade_qty_kurtosis last 10 min incl lookback BUY trade gtv max last 10 min_incl_lookback_SELL_trade_qty_stdev last_30_min_incl_lookback_BUY_trade_qty_mean asks_left_in_book 5-trading-days-lookback_MELO-hist-orders_unique-firms-sell-orders_count 1-trading-days-lookback_NBBO-hist-price_max-bam-minus-min-bam_price 1-trading-days-lookback_NBBO-hist-price_standard-deviation-bam_price 5-trading-days-lookback_NBBO-hist-price_standard-deviation-bam_price

 $5\text{-}trading\text{-}days\text{-}lookback_NBBO\text{-}hist\text{-}trades_0\%\text{-}quantile\text{-}shares\text{-}per\text{-}trade_shares$

mean(buy # of shares per trade executed in the last 90 seconds) stdev(huy # of shares per trade executed in the last 90 seconds) kurtosis(buy # of shares per trade executed in the last 90 seconds) skew(buy # of shares per trade executed in the last 90 seconds) sum(sell # of shares per trade executed in the last 90 seconds) min(sell # of shares per trade executed in the last 90 seconds) max(sell # of shares per trade executed in the last 90 seconds) mean(sell # of shares per trade executed in the last 90 seconds) stdev(sell # of shares per trade executed in the last 90 seconds) kurtosis(sell # of shares per trade executed in the last 90 seconds) sum(buy # of shares per trade executed in the last 5 minutes) min(buy # of shares per trade executed in the last 5 minutes) max(buy # of shares per trade executed in the last 5 minutes) mean(huy # of shares per trade executed in the last 5 minutes) stdev(buy # of shares per trade executed in the last 5 minutes) kurtosis(buy # of shares per trade executed in the last 5 minutes) skew(buy # of shares per trade executed in the last 5 minutes) sum(sell # of shares per trade executed in the last 5 minutes) min(sell # of shares per trade executed in the last 5 minutes). max(sell # of shares per trade executed in the last 5 minutes) mean(sell # of shares per trade executed in the last 5 minutes) stdev(sell # of shares per trade executed in the last 5 minutes) kurtosis(sell # of shares per trade executed in the last 5 minutes) skew(sell # of shares per trade executed in the last 5 minutes) sum(buy # of shares per trade executed in the last 10 minutes) min(huy # of shares per trade executed in the last 10 minutes) mean(buy # of shares per trade executed in the last 10 minutes) stdev(buy # of shares per trade executed in the last 10 minutes) sum(sell # of shares per trade executed in the last 10 minutes) max(sell # of shares per trade executed in the last 10 minutes) mean(sell # of shares per trade executed in the last 10 minutes) kurtosis(sell # of shares per trade executed in the last 10 minutes) sum(buy # of shares per trade executed in the last 30 minutes) min(buy # of shares per trade executed in the last 30 minutes) max(buy # of shares per trade executed in the last 30 minutes) stdev(huy # of shares per trade executed in the last 30 minutes) sum(sell # of shares per trade executed in the last 30 minutes) min(sell # of shares per trade executed in the last 30 minutes) max(sell # of shares per trade executed in the last 30 minutes) mean(sell # of shares per trade executed in the last 30 minutes) stdev(sell # of shares per trade executed in the last 30 minutes) kurtosis(sell # of shares per trade executed in the last 30 minutes) skew(sell # of shares per trade executed in the last 30 minutes) Number of unique firms that placed BUY SIDE orders on M-ELO for the last 1 day Number of unique firms that placed SELL SIDE orders on M-ELO for the last 1 day Number of unique firms that placed BUY OR SELL orders on M-ELO for the last 5 days Kurtosis of the bam (midpoint of NBBO) over the last 1 day Max (bid price - ask price) over the last 1 day Kurtosis of the bam (midpoint of NBBO) over the last 5 days Max (bid price - ask price) over the last 5 days skew of the bam (midpoint of NBBO) over the last 5 days (Sum of tradevolume over the last 1 day) // 2 Oth quantile of tradevolume over the last 1 day (Sum of tradevolume over the last 5 days) // 2 25th quantile of tradevolume over the last 5 days Simple average of buyside trades quantities Standard deviation of buyside signed markout for 1000 ms Maximum of buyside signed markout for 1000 ms Standard deviation of sellside trades quantities Standard deviation of sellside signed markout for 1000 ms kurtosis(buy # of shares per trade executed in the last 30 seconds) max(buy # of shares per trade executed in the last 10 minutes) stdev(sell # of shares per trade executed in the last 10 minutes) mean(buy # of shares per trade executed in the last 30 minutes) sum(eligible ask # shares per price level remaining in melo order book) Number of unique firms that placed SELL SIDE orders on M-ELO for the last 5 days (Max bam (midpoint of NBBO) value over the last 1 day) - (min bam (midpoint of NBBO) value over the last 1 day) standard deviation of the bam (midpoint of NBBO) over the last 1 day standard deviation of the bam (midpoint of NBBO) over the last 5 days Oth quantile (min) of tradevolume over the last 5 days

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