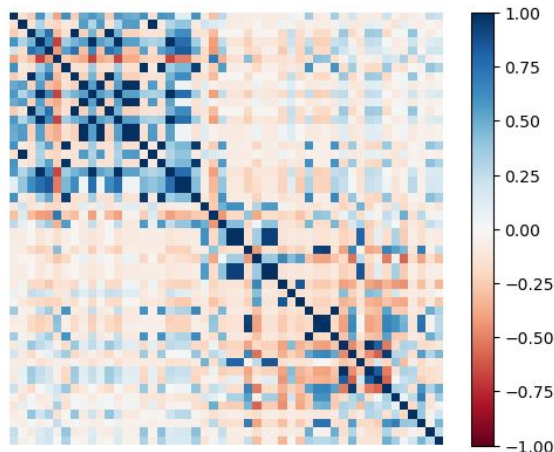


Original Symmetric LD matrix

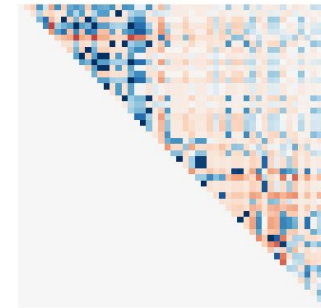
Storage: Double precision floating point format

float64: 8 Bytes per cell



1) Eliminate Redundancy

Store only upper triangular part of the matrix.



2) Quantization

Map entries to low-precision floating points / integers.

float64: 8 Bytes per cell



float32: 4 Bytes per cell



int16: 2 Bytes per cell

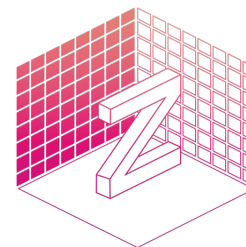








int8: 1 Byte per cell



3) Cloud-native Compressed Sparse Row (CSR) Storage Format

Entries are stored in chunked and compressed **Zarr** arrays that can be stored on and accessed via cloud storage services.



- matrix:
 - data: 
 - index_pointer: 
- metadata:
 - snp: 
 - bp_pos: 
 - a1: 
 - a2: 
- attributes
 - chromosome: 22
 - genome_build: GRCh37
 - ld_estimator: windowed
 - estimator_properties: {cm_window_size: 3}