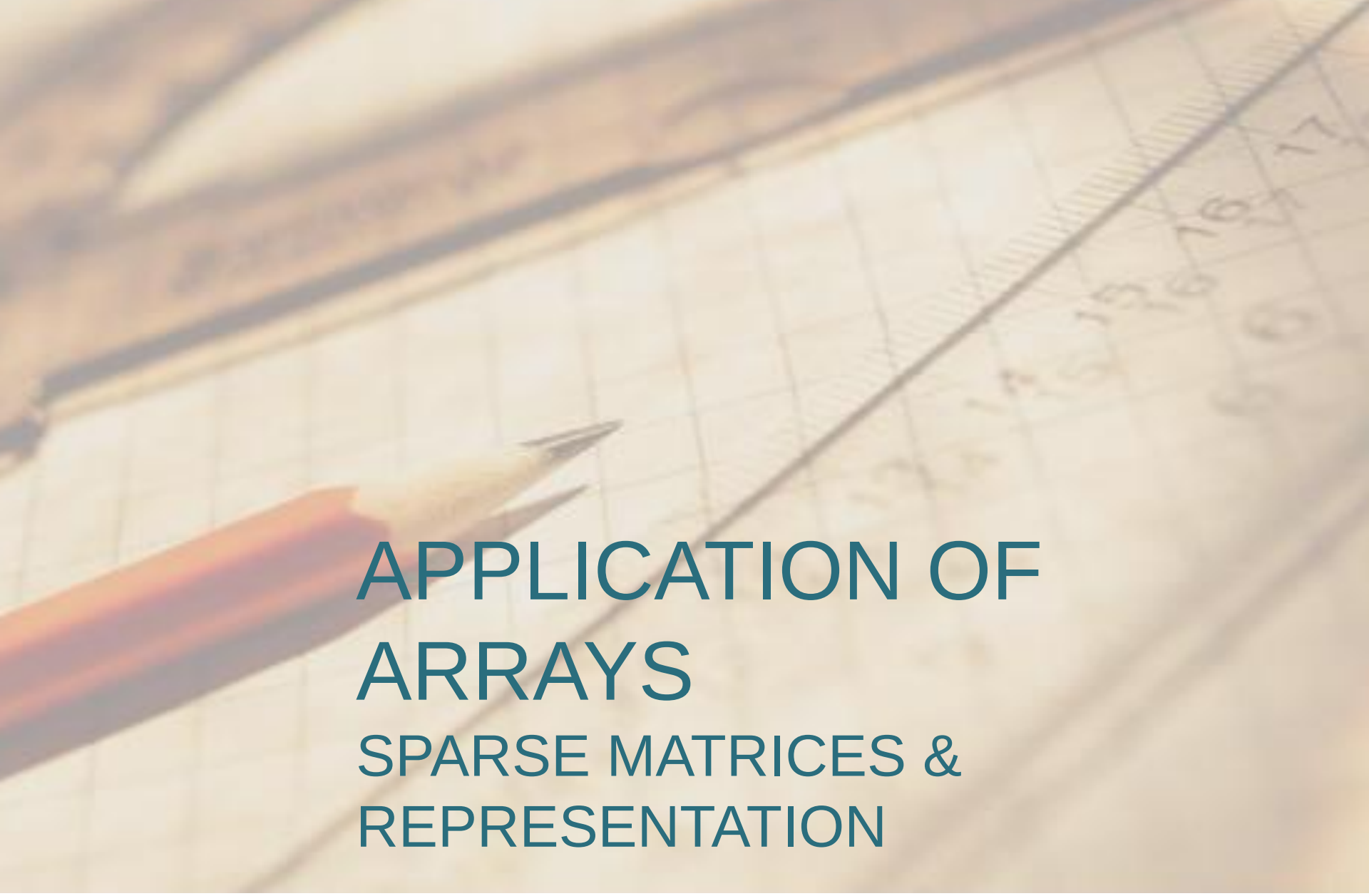

APPLICATION OF ARRAYS

SPARSE MATRICES & REPRESENTATION

Sparse Matrix

- a **sparse matrix** is a matrix in which most of the elements are zero
- sparse … many elements are zero
- dense … few elements are zero
- Eg: diagonal
- tridiagonal

Sparse Matrix

	col1	col2	col3	col4	col5	col6
row0	15	0	0	22	0	−15
row1	0	11	3	0	0	0
row2	0	0	0	−6	0	0
row3	0	0	0	0	0	0
Row 4	91	0	0	0	0	0
row5	0	0	28	0	0	0

Representation

- Represented by a two-dimensional array. Sparse matrix wastes space.
- (2) Each element is characterized by <row, col, value>.

Sparse Matrix Operations

- Transpose of a sparse matrix.
- What is the transpose of a matrix?

	row	col	value
a[0]	6	6	8
[1]	0	0	15
[2]	0	3	22
[3]	0	5	-15
[4]	1	1	11
[5]	1	2	3
[6]	2	3	-6
[7]	4	0	91
[8]	5	2	28

	row	col	value
b[0]	6	6	8
[1]	0	0	15
[2]	0	4	91
[3]	1	1	11
[4]	2	1	3
[5]	2	5	28
[6]	3	0	22
[7]	3	2	-6
[8]	5	0	-15