

# Typsetting mathematics and making symbolic reference in $\text{\LaTeX}$

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## Abstract

We will learn up some basic skills of typesetting mathematical equations and making symbolic reference in  $\text{\LaTeX}$ . We have to make the abstract longer so that the body text of the abstract appears centralised.

## 1 Table and matrix

### 1.1 Simple table

To insert a table, use the template

```
\begin{table}[h]
\begin{center}
\begin{tabular} { | c | c | c | } \hline
11 & 12 & 13 \\ \hline
21 & 22 & 23 \\ \hline
\end{tabular}
\end{center}
\end{table}
```

```

31 & 32 & 33 \\ \hline
\end{tabular}
\end{center}
\caption{...}
\label{table}
\end{table}

```

to produce table with the reference no. Table 2:

11	12	13
21	22	23
31	32	33

Table 1: This is a sample of table

## 1.2 Matrix, using `\left(` `\begin{array}{cccc}` ... `end{array}` `\right)` in **math mode**

To create a matrix with parenthesis,

$$\mathbf{M} = \left( \begin{array}{ccc} 11 & 12 & 13 \\ 21 & 22 & 23 \\ 31 & 32 & 33 \\ 41 & 42 & 43 \end{array} \right). \quad (1)$$

Matrix in Eq.(1) is a  $3 \times 3$  matrix. The number of `c` in `{cccc}` has to be at least as many as the number of column of the matrix. The elements in the role are separated by a “&” and the columns are separated by a “\\”.

### 1.3 Slightly more complicated Table

Strain	$E_b$ (eV)	$d_{\text{Fe-N}}$ (Å)	$d$ (Å)	$h$ (Å)	$Q$ (electrons)	$M_{\text{Fe}}$ ( $\mu_B$ )	$M_{\text{cell}}$ ( $\mu_B$ )	EC
0%	4.73	2.06-3.40	1.49	-0.01	0.53	3.61	3.74	HM
1%	4.56)	2.06-3.49	1.51	-0.01	0.54)	3.61	3.73	HM
2%	4.05	2.09-3.56	1.53	0.00	0.56	3.61	3,71	MH

Table 2: The calculated binding energies  $E_b$ , the average bond length between Fe atom and  $\text{N}_{\text{edge}}$  atoms  $d_{\text{Fe-N}}$ , average bond length connecting the s-triazine  $d$ , and Fe height  $h$  (refers to the difference in the  $z$ -coordinate of the Fe atom and the average of the  $z$ -coordinate of all the C and N atoms in the  $\text{C}_6\text{N}_6$  sheet). Charge transfer, magnetic moment per unit cell and per Fe atom, electronic character of the  $\text{Fe@C}_6\text{N}_6$  system are denoted by  $Q$ ,  $M_{\text{cell}}$ ,  $M_{\text{Fe}}$ , EC respectively. All the systems are half-metallic.