

# **pst-stru:** Structural schemes v0.12

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## **Abstract**

**pst-stru** is a PSTricks package to draw structural schemes in civil engineering analysis (beams, portals, archs, piles).

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---

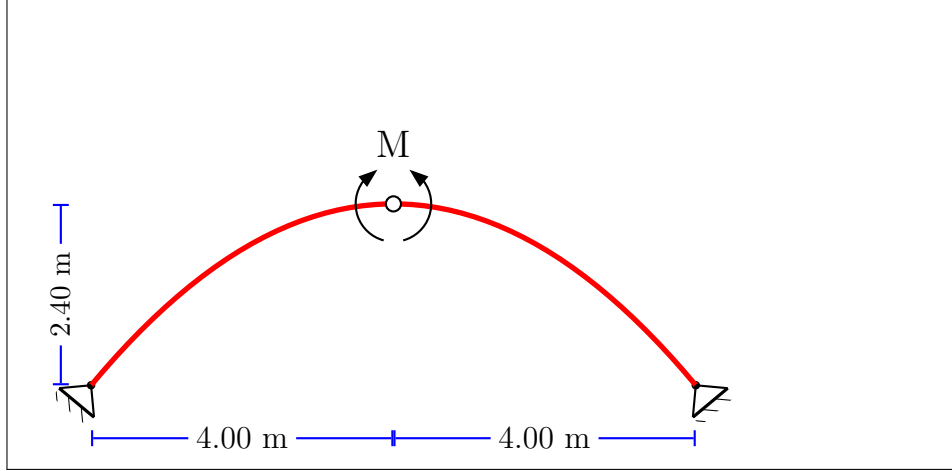
\*Thanks to Manuel Luque who inspired and initially supported this work.

Documentation revised by Herbert VoSS

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## 1 Simple example



```

1 \psset{arrowsize=0.8mm,arrowinset=0}
2 \begin{pspicture}(-5,-1)(5,5)
3   \pnode(0,2.4){00}\pnode(-4,0){A}\pnode(4,0){B}
4   \node(A)\node(B)
5   \psplot[linecolor=red,linewidth=2pt]{-4}{4}{x neg x mul 0.15 mul 2.4 add}
6   \rput{-39.8}{A}{\hinge}\rput{39.8}{B}{\hinge}\rput{0}{00}{\interhinge}
7   \rput{-5}{00}{\clockCouple}\rput{5}{00}{\noclockCouple}
8   \rput(0,3.2){\Large M}
9   \pcline[offset=-7mm,linecolor=blue]{|-|}(-4,0)(0,0)
10  \lput*{:U}{\large 4.00 m}
11  \pcline[offset=-7mm,linecolor=blue]{|-|}(0,0)(4,0)
12  \lput*{:U}{\large 4.00 m}
13  \pcline[offset=0pt,linecolor=blue]{|-|}(-4.4,0)(-4.4,2.4)
14  \lput*{:U}{2.40 m}
15 \end{pspicture}

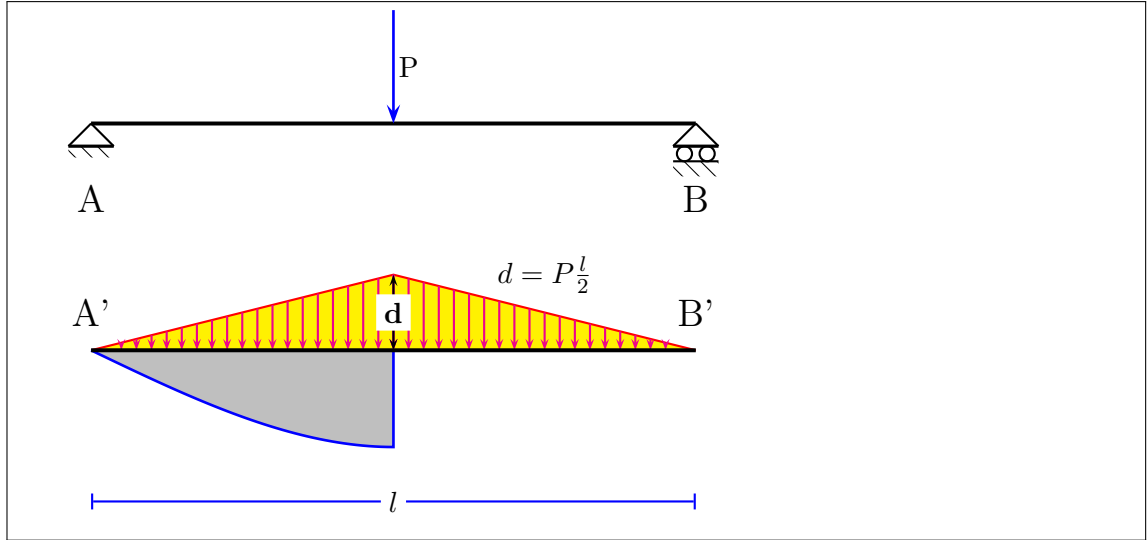
```

## 2 Elastic Line of a simple beam loaded with concentrated load P at the center line

Bernoulli's Equation:  $EJ\eta'' = -M$

The **elastic curve** of the assigned beam AB (P loaded at mid-span) is obtained by computing the Bending Moment of the auxiliary beam A'B' to which is applied the BM of AB ( $EJ=\text{const}$ )

$$EJ \cdot \eta = \frac{Pl^2}{16}x - \frac{P}{12}x^3 \quad 0 \leq x \leq l/2$$

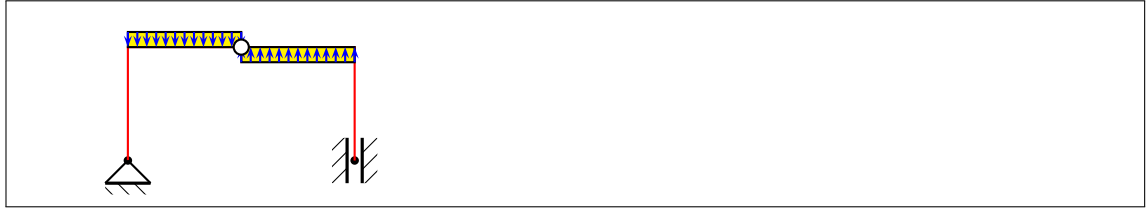


```

1 \begin{pspicture}(-1,-2.4)(9,4.5)
2   \pnode(0,3){A}\pnode(8,3){B}\pnode(0,0){A1}\pnode(8,0){B1}\pnode(4,0){M}
3   \psline[linewidth=1.5pt](0,3)(8,3) % Beam AB
4   \psArrowCivil[RotArrows=0,length=1.5,start=0.5,%
5     linecolor=blue,arrowsize=1.8mm,OffsetLabel=0.2,linewidth=1pt](A)(B){\rput{90}{P}}
6   \rput{0}(A){\hinge} \rput{0}(B){\roller}
7   \psline[linecolor=red,fillcolor=yellow,fillstyle=solid](0,0)(4,1)(8,0)
8   \rput(0,2){\Large A} \rput(8,2){\Large B}
9   %% 1st half load
10  \multido{\nStart=1.00+0.05}{-19}{%
11    \psArrowCivil[RotArrows=0,length=\nStart,start=\nStart,linecolor=magenta](A1)(M){}}
12  %% 2nd half load
13  \multido{\nStart=1.00+0.05}{-19}{%
14    \psArrowCivil[RotArrows=180,length=\nStart,start=\nStart,linecolor=magenta](B1)(M){}}
15  \pcline{<->}(4,0)(4,1)\lput*{:R}{\bf d}
16  \rput(6,1){$d=P\frac{l}{2}$} \rput(0,0.5){\Large A'} \rput(8,0.5){\Large B'}
17  \pcline[linecolor=blue]{|-|}(0,-2)(8,-2)\lput*{:U}{\bf $l$}}
18  % Parameters #1 P = 6 #2 l=8 #3 scale factor =0.02
19  %----- Elastic curve of beam AB -----
20  \def\ElasticAB#1#2#3{#1 16.0 div #2 #2 x mul mul mul
21    #1 -12.0 div x x x mul mul mul add #3 mul neg}
22  \pscustom[linecolor=blue,linewidth=1pt,fillstyle=solid,fillcolor=lightgray]{%
23    \psplot[] {0.0}{4.0}{\ElasticAB{6}{8}{0.02}}
24    \psline(4,0)(0,0)}
25  \psline[linewidth=1.5pt](0,0)(8,0) % Beam A'B'
26 \end{pspicture}

```

### 3 Antisymmetric distributed load



```

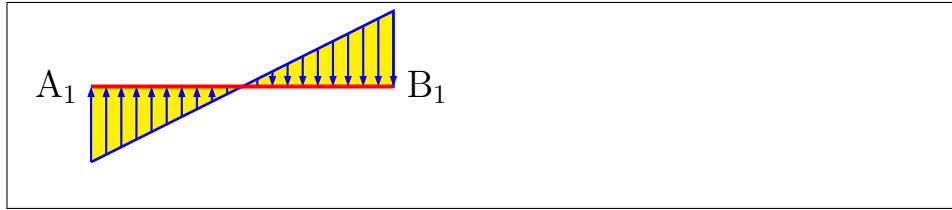
1 \begin{pspicture}(-3,-0.5)(4,2)
2   \pnode(0,1.5){00}\pnode(1.5,1.5){C}\pnode(-1.5,1.5){D}\pnode(-1.5,0){A}\pnode(1.5,0){B}
3   \node(A)\node(B)
4   \psline[linecolor=red](A)(D)(C)(B)
5   \rput{0}(A){\hinge}\rput{90}(B){\guide}
6   \psframe[fillstyle=solid,fillcolor=yellow](-1.5,1.5)(0,1.7)
7   \psframe[fillstyle=solid,fillcolor=yellow](0,1.3)(1.5,1.5)
8   \multido{\nStart=0.0+0.0833}{13}{%
9     \psArrowCivil[RotArrows=0,length=0.2,start=\nStart,linecolor=blue](D)(00){}
10    \psArrowCivil[RotArrows=180,length=0.2,start=\nStart,linecolor=blue](00)(C){}}
11   \rput{0}(00){\interhinge}
12 \end{pspicture}

```

## 4 Antisymmetric load

```
\FPmessagesfalse
\def\retta#1#2{#1 x mul #2 add}
\def\rettaTeX#1#2{%
  \multido{\nStart=0.0+0.2}{21}{%
    \pnode(\nStart,0){E1}
    \FPeval{\ValueRetta}{(#1)*(\nStart)+(#2)}
    \pnode(\nStart,\ValueRetta){E2}
    \FPeval{\Test}{abs(\ValueRetta)-0.2}
    \FPifneg{\Test}{\psset{arrowsize=0}\else\psset{arrowsize=1mm}\fi
    \psline[linecolor=blue,arrowinset=0]{->}(E2)(E1)}}

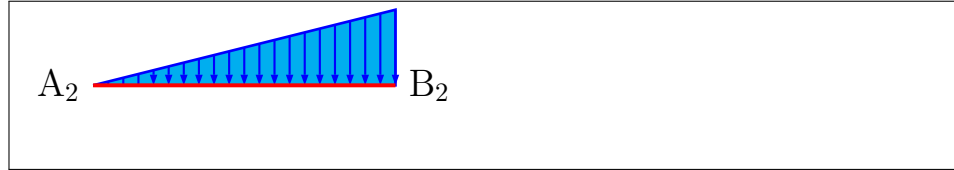
```



```
1 \begin{pspicture}(-1,-1.5)(5,1)
2 \pnode(0,0){A1}\pnode(4,0){B1}
3 \uput[180](A1){\Large A$_1$}\uput[0](B1){\Large B$_1$}
4 %-----
5 % Parameters
6 % #1 m = 0.5      y = mx + n      (1)
7 % #2 n = -1
8 %----- line 1 -----
9 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=solid,fillcolor=yellow]{
10 \psplot[linecolor=blue]{0}{4}{\retta{0.5}{-1}}
11 \psline(B1)(A1)}\rettaTeX{0.5}{-1}
12 \psline[linecolor=red,linewidth=1.5pt](A1)(B1) % Beam A1-B1
13 \end{pspicture}

```

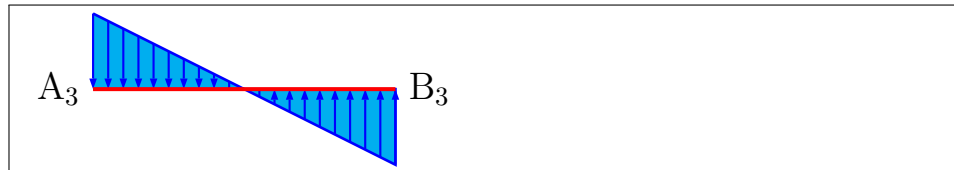
## 5 Triangular load



```

1 \begin{pspicture}(-1,-1)(5,1)
2 %-----
3 % Parameters
4 % #1 m = 0.25      y = mx + n      (2)
5 % #2 n = 0
6 %----- line 2 -----
7 \pnode(0,0) {A2}
8 \pnode(4,0) {B2}
9 \uput[180](A2){\Large A$_2$}
10 \uput[0](B2){\Large B$_2$}
11 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=solid,fillcolor=cyan]{
12 \psplot[linecolor=blue]{0}{4}{\retta{0.25}{0}}
13 \psline(B2)(A2)}
14 \rettaTeX{0.25}{0}
15 \psline[linecolor=red,linewidth=1.5pt](A2)(B2) % Beam A2-B2
16 \end{pspicture}

```

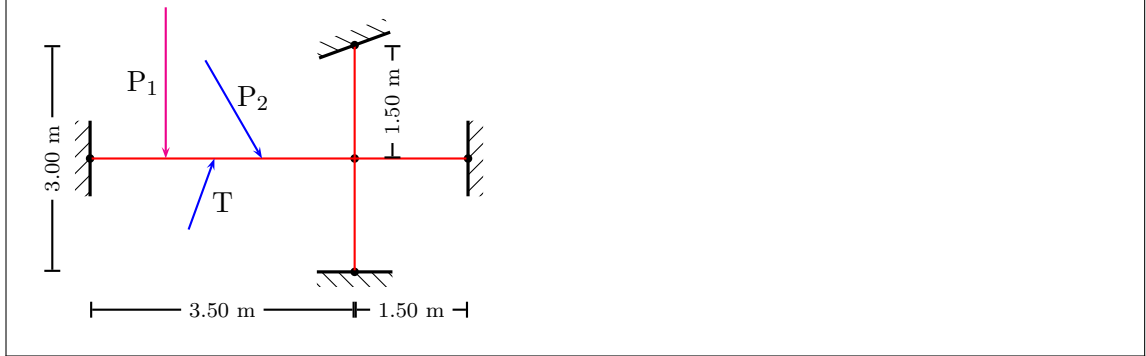


```

1 \begin{pspicture}(-1,-1)(5,1)
2 %-----
3 % Parameters
4 % #1 m = -0.5     y = mx + n      (2)
5 % #2 n = 1
6 %----- line 2 ----- Triangular load -----
7 \pnode(0,0){A3}\pnode(4,0){B3}
8 \uput[180](A3){\Large A$_3$}\uput[0](B3){\Large B$_3$}
9 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=solid,fillcolor=cyan]{
10 \psplot[linecolor=blue]{0}{4}{\retta{-0.5}{1}}
11 \psline(B3)(A3)}\rettaTeX{-0.5}{1}
12 \psline[linecolor=red,linewidth=1.5pt](A3)(B3) % Beam A3-B3
13 \end{pspicture}

```

## 6 Loads: Position and naming



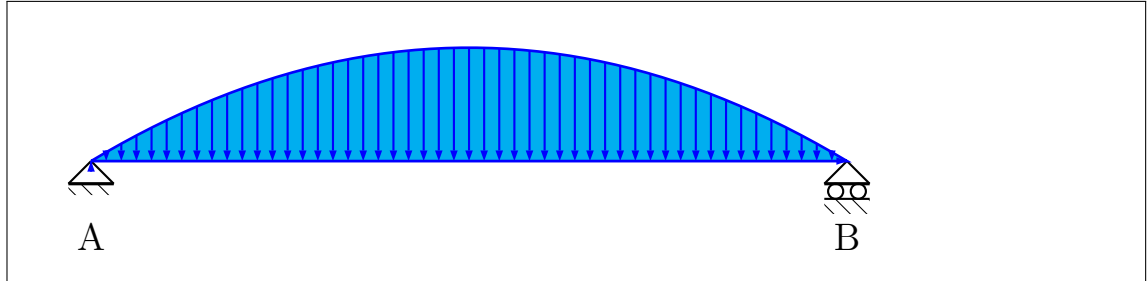
```

1 \begin{pspicture}(-3,-2.5)(3,2)
2 % ----- KNOTS definition -----
3 \pnode(-2,0){A}\pnode(1.5,0){B}\pnode(1.5,-1.5){E}\pnode(1.5,1.5){F}\pnode(3,0){G}
4 \node(A) \node(E) \node(B) \node(F) \node(G)
5 % ----- Structure drawing and fixed ends position -----
6 \psline[linecolor=red](A)(G) \psline[linecolor=red](E)(F)
7 \rput{-90}(A){\fixedend} % left FE
8 \rput{0}(E){\fixedend} % bottom FE
9 \rput{-160}(F){\fixedend} % top FE
10 \rput{90}(G){\fixedend} % right FE
11 % ----- Loads: Position and naming -----
12 \psArrowCivil[RotArrows=0,length=2.0,start=0.286,%
13   linecolor=magenta,OffsetLabel=-0.3](A)(B){\rput{90}{P$_1$}}
14 \psArrowCivil[RotArrows=30,length=1.5,start=0.65,%
15   linecolor=blue,OffsetLabel=0.3](A)(B){\rput{60}{P$_2$}}
16 \psArrowCivil[RotArrows=-200,length=1.0,start=0.47,%
17   linecolor=blue,OffsetLabel=-0.3](A)(B){\rput{-70}{T}}
18 % ----- Spans measures -----
19 \pcline [offset=-5mm]{|-|}(-2,-1.5)(1.5,-1.5)\lput*{:U}{\scriptsize 3.50 m}
20 \pcline [offset=-5mm]{|-|}(1.5,-1.5)(3,-1.5) \lput*{:U}{\scriptsize 1.50 m}
21 \pcline [offset=5mm]{|-|}(-2,-1.5)(-2,1.5) \lput*{:U}{\scriptsize 3.00 m}
22 \pcline [offset=0mm]{|-|}(2,0)(2,1.5) \lput*{:U}{\scriptsize 1.50 m}
23 \end{pspicture}

```



## 7 Distributed load

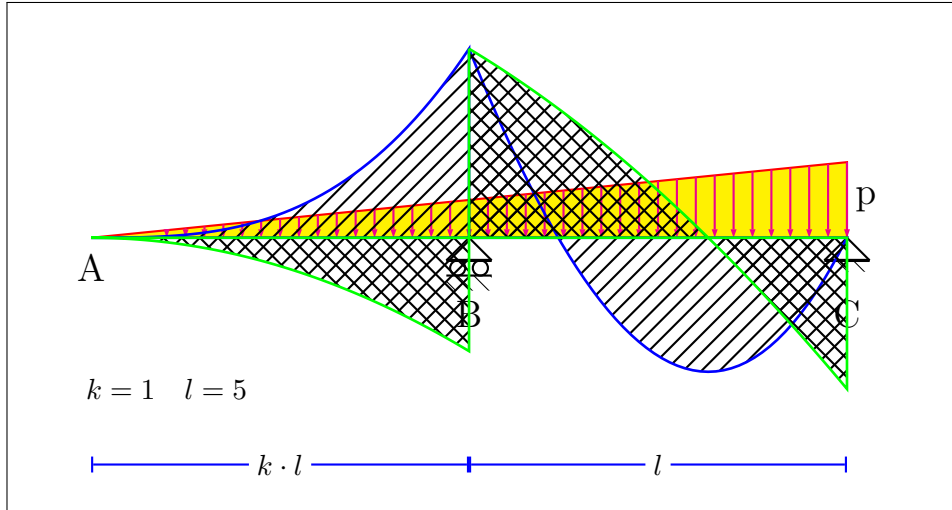


```

1 \def\BMdistributed#1#2#3{#2 x sub 0.5 #1 x mul mul mul #3 mul}
2 \begin{pspicture}(-1,-1.5)(11,2)
3   \pnode(0,0){A}\pnode(10,0){B}
4   \rput{0}{A}{\hinge}\rput{0}{B}{\roller}\rput(0,-1){\Large A}\rput(10,-1){\Large B}
5   \psline[linecolor=blue](A)(B)
6 %=====
7 % Parameters
8 % #1 q = 12
9 % #2 l = 10
10 % #3 scale factor =0.01: to be multiplied by (10/l)^2 (when l > 10)
11 %----- BM distributed load -----
12 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=solid,fillcolor=cyan]{
13   \psplot[linecolor=blue]{0}{10}{\BMdistributed{12}{10}{0.01}}
14   \psline[] (10,0)(0,0)}
15 \psset{arrowsize=1.5mm}
16 \multido{\nStart=0.0+0.2}{51}{%
17   \pnode(\nStart,0){E1}\pnode(! /x \nStart\space def x \BMdistributed{12}{10}{0.01}){E2}
18   \psline[linecolor=blue,arrowinset=0,arrowsize=1mm]{->}(E2)(E1)}
19 \end{pspicture}

```

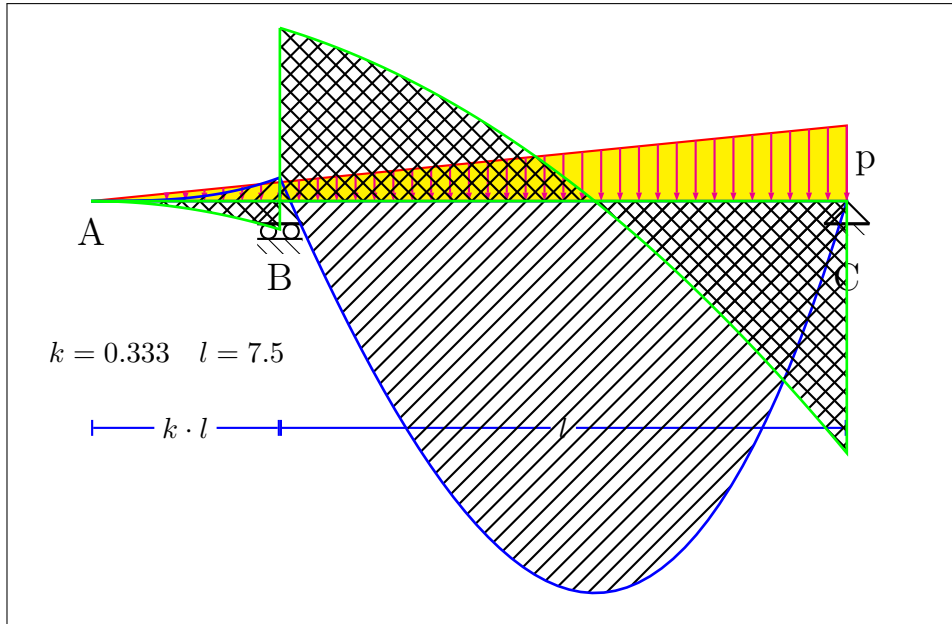
## 8 Macro \triload



```

1 \begin{pspicture}(-1,-3.5)(11,3)
2  % Total span is (K+1) times L, say AC=(K+1)*L
   [K=dimensionless value]
3  \triload[K=1,P=8,L=5] % k=1 -> AB=BC
4  % \triload[K=0.333,P=8,L=7.5] % k=1/3, like example 6
5  % \triload[K=2,P=8,L=3] % k=2 -> BM always NEGATIVE in the whole structure
6  % \triload[K=2.5,P=8,L=2] % k>2 -> Reaction in C downwards
7 \end{pspicture}

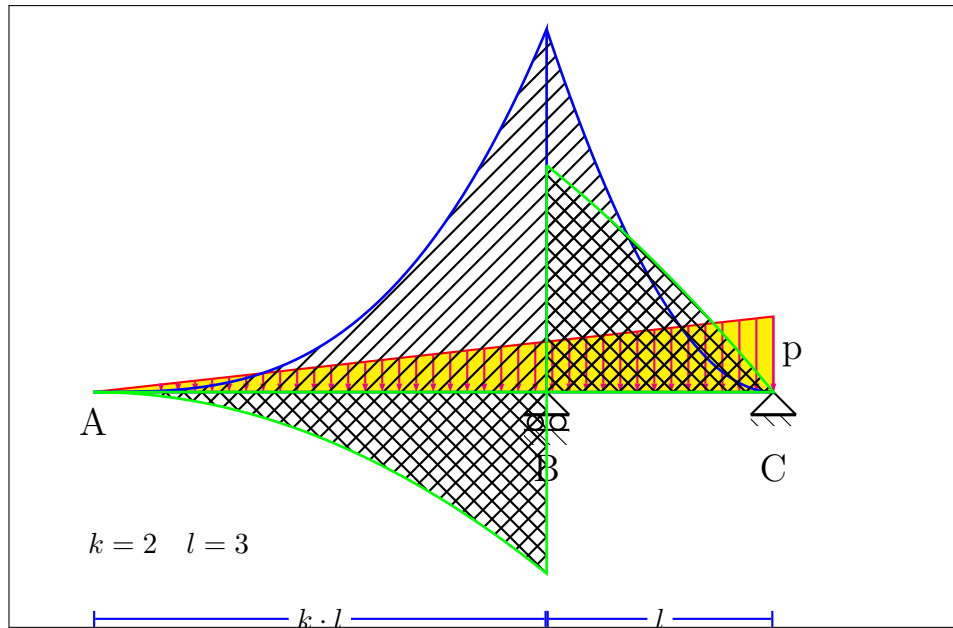
```



```

1 \begin{pspicture}(-1,-5.5)(11,2.5)
2 % \psgrid[subgriddiv=0,griddots=10,gridlabels=7pt,gridcolor=magenta]
3 % Total span is (K+1) times L, say AC=(K+1)*L
   [K=dimensionless value]
4 % \triload[K=1,P=8,L=5] % k=1 -> AB=BC
5 \triload[K=0.333,P=8,L=7.5] % k=1/3, like example 6
6 % \triload[K=2,P=8,L=3] % k=2 -> BM always NEGATIVE in the whole structure
7 % \triload[K=2.5,P=8,L=2] % k>2 -> Reaction in C downwards
8 \end{pspicture}

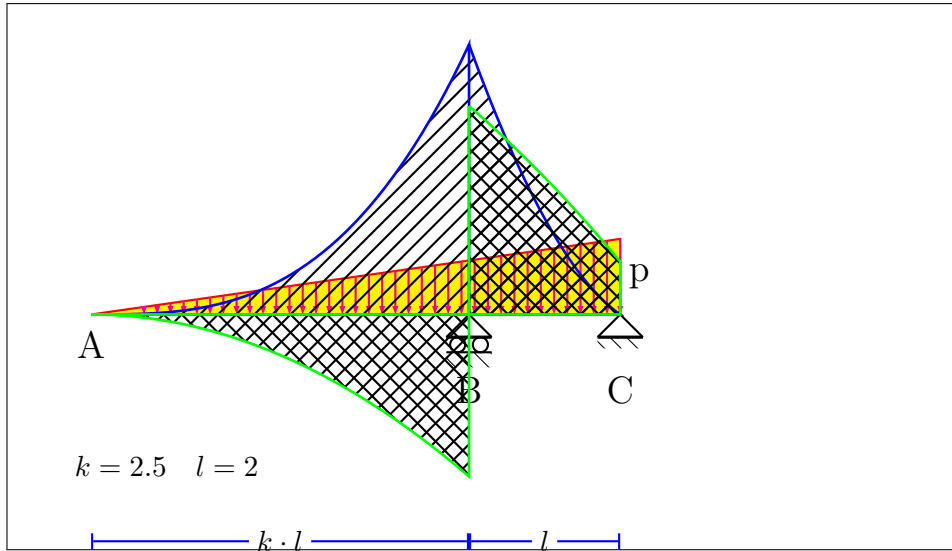
```



```

1 \begin{pspicture}(-1,-3)(11,5)
2 % \psgrid[subgriddiv=0,griddots=10,gridlabels=7pt,gridcolor=magenta]
3 % Total span is (K+1) times L, say AC=(K+1)*L
   [K=dimensionless value]
4 % -----
5 % \triload[K=1,P=8,L=5] % k=1 -> AB=BC
6 % \triload[K=0.333,P=8,L=7.5] % k=1/3, like example 6
7 \triload[K=2,P=8,L=3] % k=2 -> BM always NEGATIVE in the whole structure
8 % \triload[K=2.5,P=8,L=2] % k>2 -> Reaction in C downwards
9 % -----
10 \end{pspicture}

```



```

1 \begin{pspicture}(-1,-3)(11,4)
2 % \psgrid[subgriddiv=0,griddots=10,gridlabels=7pt,gridcolor=magenta]
3 % Total span is (K+1) times L, say AC=(K+1)*L
  [K=dimensionless value]
4 % -----
5 % \triload[K=1,P=8,L=5] % k=1 -> AB=BC
6 % \triload[K=0.333,P=8,L=7.5] % k=1/3, like example 6
7 % \triload[K=2,P=8,L=3] % k=2 -> BM always NEGATIVE in the whole structure
8 \triload[K=2.5,P=8,L=2] % k>2 -> Reaction in C downwards
9 % -----
10 \end{pspicture}

```

## 9 Non-symmetric superimposed dead load

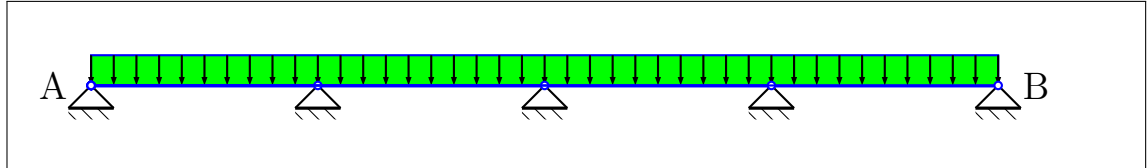


```

1 \begin{pspicture}(-3,-1)(3,2)
2   \pnode(-2,0){A}\pnode(2,0){B}\pnode(0,1.5){V}\pnode(-2,1.5){A0}\pnode(2,1.5){B0}
3   \node(A)\node(B)\node(V)
4   \psline[linecolor=red](A)(V)(B)(A)
5   \rput{0}(A){\hinge} \rput{0}(B){\roller}
6   %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
7   %      Non-symmetric superimposed dead load
8   %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
9   \psframe[fillstyle=solid,fillcolor=green](-2,1.5)(0,1.7)
10  \psframe[fillstyle=solid,fillcolor=yellow](2,0)(2.2,1.5)
11  \multido{\nStart=0.0+0.0833}{13}{%
12    \psArrowCivil[RotArrows=0,length=0.2,start=\nStart,linecolor=black](A0)(V){}
13    %      Lateral load (i.e. wind)
14    \psArrowCivil[RotArrows=180,length=0.2,start=\nStart,linecolor=blue](B)(B0){}}
15 \end{pspicture}

```

## 10 Distributed load for all beams

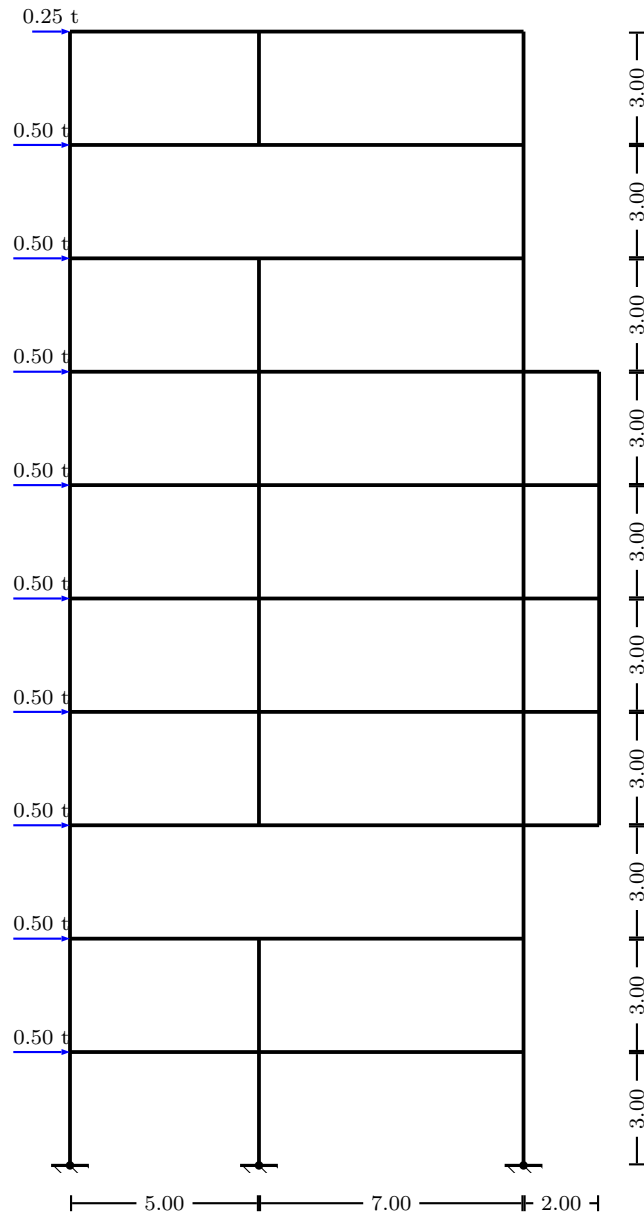


```

1 \begin{pspicture}(-1,-1)(13,1)
2 \pnode(0,0){A}\pnode(12,0){B}\pnode(12,0.4){B1}
3 \node (A) \rput(-0.5,0){\Large A} \rput(12.5,0){\Large B}
4 \psline[linecolor=blue,linewidth=1.5pt](A)(B) % join A-B
5 %-----
6 \psframe[linecolor=blue,fillcolor=green,fillstyle=solid](A)(B1)
7 %
8 % distributed load for all beams
9 \multido{\nBegin=0+0.025}{41}{%
10 \psArrowCivil[RotArrows=0,length=0.4,start=\nBegin,linecolor=black](A)(B){}}
11 %
12 % recursive routine
13 \multido{\rStart=0.00+3.00}{5}{%
14 \pnode(0,0){E1}\pnode(\rStart,0){E2}\rput{0}(E2){\hinge}
15 \psline[linecolor=blue,arrowinset=0,arrowsize=1mm]{o-o}(E1)(E2)}
16 \end{pspicture}

```

## 11 Distributed load for all beams



```
\psset{xunit=0.5cm,yunit=0.5cm}    % Scaling
\begin{pspicture}(-3,-2)(16,32)
\psgrid[subgriddiv=0,griddots=10,gridlabels=7pt,gridcolor=magenta]
```



```

% ----- KNOTS definition -----
\pnode(0,0) {A0}\pnode(5,0) {B0} \pnode(12,0) {C0}
  \node (A0) \node (B0) \node (C0)
\pnode(0,30) {A10} \pnode(5,30) {B10} \pnode(12,30) {C10}

%-----
\pnode(5,27) {B9}\pnode(5,24) {B8}
\pnode(5,6) {B2} \pnode(5,9) {B3}
%-----
\pnode(14,9) {D3} \pnode(14,12) {D4}
\pnode(14,15) {D5}\pnode(14,18) {D6}
\pnode(14,21) {D7}
%-----
\pnode(0,27) {A9}\pnode(12,27) {C9}
\pnode(0,24) {A8}\pnode(12,24) {C8}
\pnode(0,21) {A7}\pnode(12,21) {C7}
\pnode(0,18) {A6}\pnode(12,18) {C6}
\pnode(0,15) {A5}\pnode(12,15) {C5}
\pnode(0,12) {A4} \pnode(12,12) {C4}
\pnode(0,9) {A3} \pnode(12,9) {C3}
\pnode(0,6) {A2} \pnode(12,6) {C2}
\pnode(0,3) {A1} \pnode(12,3) {C1}
%
% ----- Structure drawing and fixed ends position -----
\psline[linecolor=black,linewidth=0.05](A0)(A10)
\psline[linecolor=black,linewidth=0.05](C0)(C10)
%
\psline[linecolor=black,linewidth=0.05](B9)(B10)
\psline[linecolor=black,linewidth=0.05](B3)(B8)
\psline[linecolor=black,linewidth=0.05](B0)(B2)
%
\psline[linecolor=black,linewidth=0.05](A10)(C10)
\psline[linecolor=black,linewidth=0.05](A9)(C9)
\psline[linecolor=black,linewidth=0.05](A8)(C8)
\psline[linecolor=black,linewidth=0.05](A7)(D7)
\psline[linecolor=black,linewidth=0.05](A6)(D6)
\psline[linecolor=black,linewidth=0.05](A5)(D5)
\psline[linecolor=black,linewidth=0.05](A4)(D4)
\psline[linecolor=black,linewidth=0.05](A3)(D3)
\psline[linecolor=black,linewidth=0.05](A2)(C2)
\psline[linecolor=black,linewidth=0.05](A1)(C1)
%
\psline[linecolor=black,linewidth=0.05](D3)(D7)
\rput{0}(A0){\fixedend} % bottom FE, column A
\rput{0}(B0){\fixedend} % bottom FE, column B

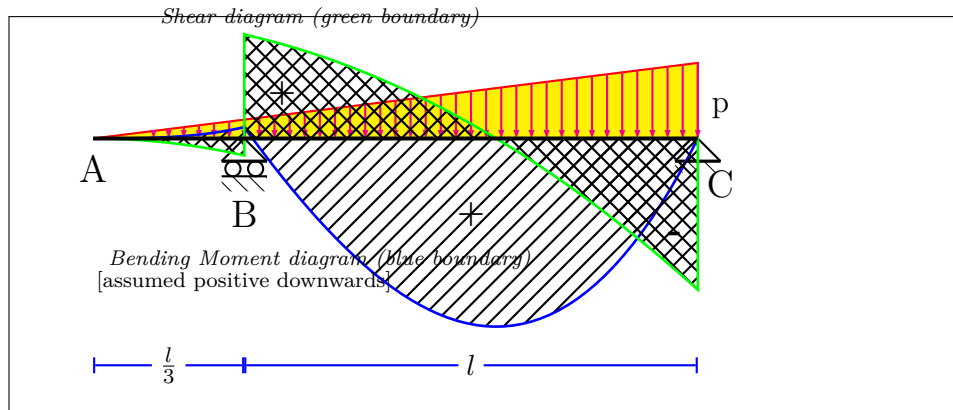
```

```

\lput{0}(C0){\fixedend}          % bottom FE, column C
% ----- Loads: Position and naming -----
\psArrowCivil[RotArrows=90,length=1.0,start=0,%
  linecolor=blue,OffsetLabel=0.2](A10)(B10){\lput{0}{\scriptsize 0.25 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A9)(B9){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A8)(B8){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A7)(C7){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A6)(C6){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A5)(C5){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A4)(C4){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A3)(B3){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A2)(B2){\lput{0}{\scriptsize 0.50 t}}
\psArrowCivil[RotArrows=90,length=1.5,start=0,%
  linecolor=blue,OffsetLabel=0.2](A1)(C1){\lput{0}{\scriptsize 0.50 t}}
%
% ----- Spans measures -----
\pcline [offset=-0.5]{|-|}(0,0)(5,0) \lput*{:U}{\scriptsize 5.00}
\pcline [offset=-0.5]{|-|}(5,0)(12,0) \lput*{:U}{\scriptsize 7.00}
\pcline [offset=-0.5]{|-|}(12,0)(14,0) \lput*{:U}{\scriptsize 2.00}
%-----
\pcline [offset=-0.5]{|-|}(14,0)(14,3) \lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,3)(14,6) \lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,6)(14,9) \lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,9)(14,12) \lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,12)(14,15)\lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,15)(14,18)\lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,18)(14,21)\lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,21)(14,24)\lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,24)(14,27)\lput*{:U}{\scriptsize 3.00}
\pcline [offset=-0.5]{|-|}(14,27)(14,30)\lput*{:U}{\scriptsize 3.00}
\end{pspicture}

```

**12 Simple Beam with one overhang: triangular distributed load  $p$**



```

1 \begin{pspicture}(-1,-3.5)(9,1.5)
2 \pnode(0,0) {A}\pnode(2,0) {B}\pnode(8,0) {C}
3 \rput{0}{(C){\hinge}}\rput{0}{(B){\roller}}
4 \psline[linecolor=red,fillcolor=yellow,fillstyle=solid](0,0)(8,0)(8,1)(0,0)
5 \multido{\nStart=1.00+0.025}{-37}{-%
6   \psArrowCiv[RotArrows=0,length=\nStart,start=\nStart,%
7     linecolor=magenta](A)(C){}}
8 \rput(8.3,0.4){\large p} \rput(0,-0.4){\Large A}
9 \rput(2,-1){\Large B} \rput(8.3,-0.6){\Large C}
10 \pcline[offset=0,linecolor=blue]{|-|}(0,-3)(2,-3) \lput*{:U}{\bf $\frac{1}{3}$}
11 \pcline[offset=0,linecolor=blue]{|-|}(2,-3)(8,-3) \lput*{:U}{\bf $1$}
12 %%%=====
13 % Parameters: #1 p = 6 #2 l = 6 #3 scale factor =0.15
14 %----- Bending Moment in span AB -----
15 \def\MflettAB#1#2#3{#1 #2 div -.125 mul x mul x mul #3 mul neg}
16 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=hlines]{
17   \psplot[]{}{2}{\MflettAB{6}{6}{0.15}}\psline[] (2,0)(0,0)
18 %----- Shear in span AB -----
19 \def\TaglioAB#1#2#3{#1 #2 div -.375 mul x mul x mul #3 mul}
20 \pscustom[linecolor=green,linewidth=1pt,fillstyle=crosshatch]{
21   \psplot[]{}{2}{\TaglioAB{6}{6}{0.15}}\psline[] (2,0)(0,0)
22 %----- Bending Moment in span BC -----
23 \def\MflettBC#1#2#3{#1 #2 div -.125 mul x mul x mul x mul
24   #1 3.375 div #2 mul x mul add #1 10.125 div #2 mul #2 mul sub #3 mul neg}
25 \pscustom[linecolor=blue,linewidth=1pt,fillstyle=hlines]{%
26   \psplot[]{}{8}{\MflettBC{6}{6}{0.15}}\psline[] (8,0)(2,0)
27 %----- Shear in span BC -----
28 \def\TaglioBC#1#2#3{#1 #2 div -.375 mul x mul x mul
29   #1 3.375 div #2 mul add #3 mul}
30 \pscustom[linecolor=green,linewidth=1pt,fillstyle=crosshatch]{%
31   \psplot[]{}{8}{\TaglioBC{6}{6}{0.15}}\psline[] (8,0)(2,0)(2,1.4)
32 %%%=====
33 \psline[linewidth=1.5pt](0,0)(8,0) % Printing beam AC after diagrams BM/S
34 \rput(3,1.6){\em {\scriptsize Shear diagram (green boundary)}}
35 \rput(3,-1.6){\em {\scriptsize Bending Moment diagram (blue boundary)}}
36 \rput(2,-1.9){\scriptsize [assumed positive downwards]}
37 \rput(5,-1){\bf {\large +}} \rput(2.5,0.6){\bf {\large +}}
38 \rput(7.7,-1.3){\bf {\Large -}}
39 \end{pspicture}

```

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