Main Title

sub title

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Science and Engineering

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August 31, 2015

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1 Section Headings

We (Ancey et al., 1996) BBB (Radjavi and Rosenthal, 1973) in this section how to obtain headings for the various sections and subsections of our document.

1.1 Headings in the article Document Style

In the article style, the document may be divided up into sections, subsections and subsubsections, and each can be given a title, printed in a boldface font, simply by issuing the appropriate command.

The foundations[1] of the rigorous study of *analysis* were laid in the nineteenth century, notably by the mathematicians Cauchy and Weierstrass. Central to the study of this subject are the formal definitions of *limits* and *continuity*.

Let D be a subset of $\mathbf{R}$ and let $f\colon D \to \mathbf{R}$ be a real-valued function on D. The function f is said to be *continuous* on D if, for all $\epsilon > 0$ and for all $x \in D$, there exists some $\delta > 0$ (which may depend on x) such that if $y \in D$ satisfies

$$|y - x| < \delta$$

then

$$|f(y) - f(x)| < \epsilon.$$

One may readily verify that if f and g are continuous functions on D then the functions $f + g$, $f - g$ and $f.g$ are continuous. If in addition g is everywhere non-zero then f/g is continuous.

2 algorithm

3 math

3.1 inline equation

In physics, the mass-energy equivalence is stated by the equation $E = mc^2$, discovered in 1905 by Albert Einstein.

[1] Inside minipage

Algorithm 1: IntervalRestriction

Data: $G = (X, U)$ such that G^{tc} is an order.
Result: $G = (X, V)$ with $V \subseteq U$ such that G^{tc} is an interval order.
begin
  $V \longleftarrow U$
  $S \longleftarrow \emptyset$
  for $x \in X$ **do**
    $NbSuccInS(x) \longleftarrow 0$
    $NbPredInMin(x) \longleftarrow 0$
    $NbPredNotInMin(x) \longleftarrow |ImPred(x)|$
  for $x \in X$ **do**
    if $NbPredInMin(x) = 0$ **and** $NbPredNotInMin(x) = 0$ **then**
      $AppendToMin(x)$
1 **while** $S \neq \emptyset$ **do**
REM   remove x from the list of T of maximal index
2   **while** $|S \cap ImSucc(x)| \neq |S|$ **do**
      for $y \in S - ImSucc(x)$ **do**
        { remove from V all the arcs zy : }
        for $z \in ImPred(y) \cap Min$ **do**
          remove the arc zy from V
          $NbSuccInS(z) \longleftarrow NbSuccInS(z) - 1$
          move z in T to the list preceding its present list
          {i.e. If $z \in T[k]$, move z from $T[k]$ to $T[k-1]$}
        $NbPredInMin(y) \longleftarrow 0$
        $NbPredNotInMin(y) \longleftarrow 0$
        $S \longleftarrow S - \{y\}$
        $AppendToMin(y)$
    $RemoveFromMin(x)$

3.2 independent

The mass-energy equivalence is described by the famous equation

$$E = mc^2$$

discovered in 1905 by Albert Einstein. In natural units ($c = 1$), the formula expresses the identity

$$E = m \tag{1}$$

$$\int \oint \sum \prod \subset \supset \subseteq \supseteq \ \alpha\beta\gamma\rho\sigma\delta\epsilon \tag{2}$$

Let $\mathbf{u}$,$\mathbf{v}$ and $\mathbf{w}$ be three vectors in $\mathbf{R}^3$. The volume V of the parallelepiped with corners at the points $\mathbf{0}$, $\mathbf{u}$, $\mathbf{v}$, $\mathbf{w}$, $\mathbf{u}+\mathbf{v}$, $\mathbf{u}+\mathbf{w}$, $\mathbf{v}+\mathbf{w}$ and $\mathbf{u}+\mathbf{v}+\mathbf{w}$ is given by the formula

$$V = (\mathbf{u} \times \mathbf{v}) \cdot \mathbf{w}.$$

$$f(x, y, z) = 3y^2 z \left(3 + \frac{7x + 5}{1 + y^2}\right) \tag{3}$$

In non-relativistic wave mechanics, the wave function $\psi(\mathbf{r}, t)$ of a particle satisfies the *Schrödinger Wave Equation*

$$i\hbar \frac{\partial \psi}{\partial t} = \frac{-\hbar^2}{2m} \left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2}\right) \psi + V\psi.$$

It is customary to normalize the wave equation by demanding that

$$\iiint_{\mathbf{R}^3} |\psi(\mathbf{r}, 0)|^2 \, dx \, dy \, dz = 1.$$

A simple calculation using the Schrödinger wave equation shows that

$$\frac{d}{dt} \iiint_{\mathbf{R}^3} |\psi(\mathbf{r}, t)|^2 \, dx \, dy \, dz = 0,$$

and hence

$$\iiint_{\mathbf{R}^3} |\psi(\mathbf{r}, t)|^2 \, dx \, dy \, dz = 1$$

for all times t. If we normalize the wave function in this 34 4 4.1 way then, for any (measurable) subset V of $\mathbf{R}^3$ and time t,

$$\iiint_{V} |\psi(\mathbf{r}, t)|^2 \, dx \, dy \, dz$$

represents the probability that the particle is to be found within the region V at time t.

4 list

1. $d(x, y) \geq 0$ for all points x and y of X;
2. $d(x, y) = d(y, x)$ for all points x and y of X;
3. $d(x, z) \leq d(x, y) + d(y, z)$ for all points x, y and z of X;
4. $d(x, y) = 0$ if and only if the points x and y coincide.

- $d(x, y) \geq 0$ for all points x and y of X;
- $d(x, y) = d(y, x)$ for all points x and y of X;
- $d(x, z) \leq d(x, y) + d(y, z)$ for all points x, y and z of X;
- $d(x, y) = 0$ if and only if the points x and y coincide.

test1 AAAAAA

test2 AAAAAA

5 figure

Figure 1: This is just a long figure caption for the minion in Despicable Me from Pixar

6 box

This is an easy way to box text within a document!

7 box and code

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

float **train_data;
int *lable;
int main()
{
    int row = 0;
    int col = 0;

    char buffer[10000];
    FILE *fp = fopen("../../NeuralNetC/iris.data", "rb");
    while (1) {
        if (!fgets(buffer, sizeof buffer, fp)) break;
        //printf("%s\n", buffer);
        char seps[] = ", \t\n\r";
        char *token;
        token = strtok(buffer, seps);
        int i = 0;
        while (token != NULL) {
            printf("%d, %s\n", i, token);
            if(i==0) row = atoi(token);
            if(i==1) col = atoi(token);
            token = strtok(NULL, seps);
            i++;
        }
        printf("%d %d", row, col);
    }
}

//float **train_data;
//int *lable;
//
//int main(int argc, const char * argv[]) {
//    freopen("../../NeuralNetC/iris.data", "r", stdin);
//    //freopen("test.out", "w", stdout);
```

```
//
//    int row;
//    int col;
//
//    scanf("%d", &row);
//    scanf("%d", &col);
//
//    printf("%d %d", row, col);
//
//    train_data = (float **) malloc (row * sizeof(float*));
//    lable = (int *) malloc (row * sizeof(int));
//    char label_str[255];
//    for (int i = 0; i < row; i++) {
//        train_data[i] = (float *) malloc ((col - 1) * sizeof(float));
//        for (int j = 0; j < col - 1; j++) {
//            scanf("%f", &train_data[i][j]);
//        }
//        scanf("%s",label_str);
//    }
//
//    for (int i = 0; i < row; i++) {
//        for (int j = 0; j < col - 1; j++) {
//            printf("%f ", train_data[i][j]);
//        }
//
//    }
//
//    fclose(stdin);
//    return 0;
//}
```

References

Ancey, C., Coussot, P., and Evesque, P. (1996). Examination of the possibility of a fluid-mechanics treatment of dense granular flows. *Mechanics of Cohesive-frictional Materials*, 1(4):385–403.

Radjavi, H. and Rosenthal, P. (1973). *Invariant Subspaces*. Springer-Verlag, New York.