

# 教唱歌软件介绍

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# 基本内容

- 软件的下载与安装
- 练音模式
- 基本的乐谱输入
- 程序中各按钮的作用
- 教唱歌软件的学术意义

# 软件的下载与安装

- 下载网址：[www.appmath.cn](http://www.appmath.cn)，单击“学唱歌软件”，再单击“下载”就可以下载一个自解压的文件，名字叫changgesetup.exe，执行它，就将两个文件，changge.exe，和chang.wav解到任何一个子目录，这两个文件很小，可以保存在U盘里，拷贝到任何计算机的文件夹，直接执行既可，没有任何其它的安装动作，也不会修改注册表。

# 练音模式

- 只要双击**changge.exe**，也就是带“唱”字的图标，程序就开始运行。这个时候只要单击“练音模式”按钮，就可以首先将“多来米发梭拉西多”按十二个调教唱一遍，每一次先播放一次，然后听到唱字的时候，就跟着唱一遍。这是熟悉各种乐调的基础，是练习唱歌的最基本训练。

# 乐谱输入

- 在程序窗口的下方有一个编辑框，可以用来输入乐谱，然后单击“装入”按钮，就可以将输入的乐谱进行演奏，这个时候再单击“练音模式”按钮，就会将刚才装入的乐谱按十二个调演奏一遍。
- 这些乐谱可以用字符“|”分割成一些乐句，则在练音模式中会依次将所有的乐句都按十二个调演奏一遍。如果只有一个乐句，当然就用不着字符“|”。

# 剪粘板操作

视窗系统中有一个看不见的剪粘板，虽然你看不见，但是可以往里面放内容，并在需要的时候将内容粘出来。

用鼠标拖动的办法选定一段内容，然后按 **Ctrl-C** 键，这段内容就进了剪粘板。如果在任何一个编辑框或者编辑软件中下按 **Ctrl-V** 键，剪粘板的内容就粘在当前的位置。

可以将网页，**doc** 文件，记事本产生的文本文件中的乐谱粘到本软件的编辑框中。

# 乐音由一对一对的数字构成

- 每两个数字由逗号隔开，中间也可以有一些空格键和回车键等等。
- 每一对数字中，第一个数字代表这个音符的时间长度，单位是拍，第二个数字代表音高。
- 下面先说时间，再说音高。

# 时间（节拍）格式

陈谱		简谱
1,6	=	6
10,6	=	6 -
100,6	=	6 - -
1000,6	=	6 - - -



# 时间（节拍）格式

陈谱		简谱
0.1,6	=	<u>6</u>
0.01,6	=	<u><u>6</u></u>
1.1,6	=	6 •
0.11,6	=	<u>6</u> •

# 时间（节拍）格式

陈谱		简谱
0.011,6	=	<u><u>6</u></u> ●
10.1,6	=	6 - <u>6</u>
100.1,6	=	6 - - <u>6</u>
1000.1,6	=	6 - - - <u>6</u>

# 时间（节拍）格式

陈谱		简谱
3,3,3,5,3,6	=	$\overset{3}{\curvearrowright} 356$
0.3,3,0.3,5,0.3,6	=	$\overset{3}{\curvearrowright} \underline{356}$
0.03,3,0.03,5,0.03,6	=	$\overset{3}{\curvearrowright} \underline{\underline{356}}$

# 和声

陈谱		简谱
0,1,0,3,1,5	=	5 3 1
0,1,0,3,0.1,5	=	5 3 <u>1</u>

# 休止符

陈谱		简谱
1,0	=	0
10,0	=	0 -
0.1,0	=	<u>0</u>
0.01,0	=	0 =

# 音高格式

陈谱		简谱
1,6	=	6
1,60	=	$\dot{6}$
1,600	=	$\ddot{6}$

# 音高格式

陈谱		简谱
1,0.6	=	6̣
1,0.06	=	6̣̣

# 半音格式

陈谱		简谱
1,6.5	=	#6
1,65	=	#6̣
1,650	=	#6̣̣
1,0.65	=	#6̣̣̣
1,0.065	=	#6̣̣̣̣



# 乐句例子

简谱:

12 65 5 -  
●●

陈谱:

0.1,1, 0.1,2, 0.1,0.6, 0.1,0.5, 10,5

# 曲调和速度

- 各个乐句间用字符 “|” 隔开
- 每一个乐句的一开始，可以有一个曲调的符号，是 “do=” 后跟大写字母再可选地跟 # 或 b 的形式，例如，do=C, 就是 C 调，而 do=Bb 就是降 B 调，do=F# 是升 F 调。
- 每一个乐句的一开始，可以有一个 “s=” 后跟数字再跟逗号的格式，代表每分钟多少拍，例如 s=60, 代表每分钟六十拍。

# 曲调和速度

- 如果一个乐句没有曲调符号，则默认是和前一个乐句一样。如果前一个乐句也没有曲调符号，则跟再前面的一个乐句的曲调一样，如果直到第一个乐句都没有曲调符号，则默认为**G**调。
- 因此，由多个乐句组成的乐曲，是可以根据需要中途变调的。
- 但一个乐句不能够在中间变调。如果需要变调，则用字符“|”隔成两个乐句。

# 曲调和速度

- 如果一个乐句没有速度符号，则默认速度是和前一个乐句的速度一样。如果前一个乐句也没有速度符号，则跟再前面的一个乐句的速度一样，如果直到第一个乐句都没有速度符号，则默认为每秒钟**120**拍。
- 因此，由多个乐句组成的乐曲，是可以根据需要中途变速的。
- 但一个乐句不能够在中间变速。如果需要变速，则用字符“|”隔成两个乐句。

# 乐句例子

简谱:

1 • 2 3 • 1 3 1 3 - | 2 • 3 44 32 4 - - -

陈谱:

do=C,s=60,1.1,1, 0.1,2, 1.1,3, 0.1,1, 1,3, 1,1,  
10,3,| 1.1, 2, 0.1,3, 0.1,4, 0.1,4, 0.1,3, 0.1,2,  
1000,4

# 歌曲例子

## 《请把我的歌带回你的家》

do=C, 0.1,0.6,0.1,0.6,0.1,1,0.1,2,1.1,3,0.1,5|  
0.1,6,0.1,0.6,0.1,1,0.1,2,10,3|  
0.1,2,0.1,2,0.1,2,0.1,3,0.1,5,0.1,5,0.1,5,0.1,6,1000,3|  
0.1,0.6,0.1,0.6,0.1,1,0.1,2,1.1,3,0.1,5|  
0.1,6,0.1,0.6,0.1,1,0.1,2,10,3|  
0.1,2,0.1,2,0.1,2,0.1,3,0.1,5,0.1,5,1,0.5,1000,0.6|  
0.11,10,0.01,10,0.1,10,0.1,10,0.1,6,0.1,7,1,10|  
0.11,10,0.01,10,0.1,10,0.1,10,0.1,6,0.1,7,1,10|  
0.11,20,0.01,20,0.1,20,0.1,20,1,10,1,20,1000,7|  
0.11,10,0.01,10,0.1,10,0.1,10,0.1,6,0.1,7,1,10|  
0.11,10,0.01,10,0.1,10,0.1,10,0.1,6,0.1,7,1,10|  
0.11,20,0.01,20,0.1,20,0.1,10,1,7,0.1,5.5,0.1,7,1000,6

# 声部

每一个乐句都可以分为若干个声部，各个声部之间用字符“&”隔开。

简谱：

1̇	3̇	5	3̇
<u>13</u>	<u>53</u>	<u>13</u>	<u>53</u>

对应的陈谱是：

| 1,10, 1,30, 1,5, 1,30, &

0.1,1, 0.1,3, 0.1,0.5, 0.1,3,

0.1,1, 0.1,3, 0.1,0.5, 0.1,3,|

# 歌曲例子

## 《在北京的金山上》

do=C,s=80,0.1,6,0.1,10,0.1,20,0.1,30,0.1,6,0.1,10,0.1,20,0.1,30,&  
0.1,0.6,0,1,1,3,0,1,0.1,3,0.1,0.6,0,1,1,3,0,1,0.1,3|  
0.1,3,0.1,5,0.1,6,0.1,10,0,6,1,20,0.01,20,0.01,10,0.01,10,0.01,6,&  
0,0,7,1,2,0,0.6,1,1,0.1,0.2,0,0.6,0,1,1,2,0,0.6,0,1,0.1,2|  
1.1,6,0.01,10,0.01,6,0,6,0.1,3,0,6,0.1,3,0,6,0.1,3,0.1,0,&  
0.1,0.6,0,1,1,3,0,1,0.1,3,0,1,0.1,0.6,0,1,0.1,0.6,0,1,0.1,0.6,0.1,0|  
1,6,0.1,6,0.1,10,1,30,0.1,30,0.1,20,1,10,0.1,20,0.1,30,0,20,1,6,0.01,20,0.01,10,0.01,10,0.01,6,&  
0.1,0.6,0,3,1,1,0,1,0.1,3,0.1,0.6,0,3,1,1,0,1,0.1,3,0.1,0.4,0,0.6,1,2,0,0.6,0.1,2,0.1,0.2,0,0.6,0,1,1,2,0,0.6,0,1,0.1,2,|  
100,6,1,10 & 0.1,0.6,0,3,1,1,0,1,0.1,3,0.1,0.6,0,3,1,1,0,1,0.1,3|  
0,30,1,6,0.1,20,0.01,10,0.01,6,1,10,0.1,20,0.1,30,&  
0.1,0.4,0.01,0.6,0.01,2,1,4,0.1,0.3,0.01,0.6,0.01,1,1,3|  
1,6,0.1,10,0.1,20,1,6,0.01,6,0.01,5,0.01,5,0.01,3,&  
0.1,0.2,0.01,0.4,0.01,0.6,1,2,0.1,0.1,0.01,0.3,0.01,0.6,1,1,|  
1000,3, & 0.1,0.03,0.01,0.07,0.01,0.3,0.1,0.5,0.1,0.3,0.1,0.03,0.01,0.07,0.01,0.3,0.1,0.5,0.1,0.3,|  
0,1,0.1,6,0.1,6,0.1,5,0,3,0.1,0.7,0,1,0.1,6,0.1,6,0.1,5,0,3,0.1,0.7,&  
0,0,06,1,1,0.3,0,0.3,0.1,0.5,0,0.06,1,1,0.3,0,0.3,0.1,0.5,|  
0,3,0.1,6,0.1,6,0.1,10,0.1,30,0,20,1,6,0.01,20,0.01,10,0.01,10,0.01,6,&  
0,1,0.1,0.6,0.1,0.6,0.1,0.5,0.1,0.3,0.1,0.2,0,0.6,1,2,0,0.6,0.1,2,|  
1000,6,& 0.1,0.06,0.01,0.3,0.01,0.6,0.1,1,0.1,0.6,0.1,0.06,0.01,0.3,0.01,0.6,0.1,1,0.1,0.6,|  
0.1,10,0.01,6,0.01,10,0.1,20,0.1,30,0.1,6,0.01,6,0.01,5,1,3,&  
0,0.6,0,1,1.1,3,0,0.6,0,1,0.1,3,0,0.7,1.1,0.3,0,0.7,0.1,0.3,|  
0.1,3,0.1,5,0,6,0.1,3,0.1,10,0,20,1,6,0.01,20,0.01,10,0.01,10,0.01,6,&  
0.1,1,0.1,0.7,0,0.6,1,1,0.1,0.2,0,0.6,0,1,1,2,0,0.6,0,1,0.1,2,|  
1.1,6,0.01,10,0.01,6,0,6,0.1,3,0,6,0.1,3,0,6,0.1,3,&  
0.1,0.6,0,1,1,3,0,1,0.1,3,0,1,0.1,0.6,0,1,0.1,0.6,0,1,0.1,0.6



# 歌曲例子

## 《月亮代表我的心》

```
do=C,s=100,10,50,0,1,50,0,1,30,0,1,10,0,1,7 &
0,1,0,1,0,1,0,5,0,1,3,0,1,1,10,5,]
1000,30,80,1,0,06,0,1,0,6,0,1,3,0,1,1,10,6,]
10,50,0,1,60,0,1,40,0,1,20,0,1,10,8,0,10,04,0,1,0,1,0,6,0,1,0,4,10,4,]
100,1,7 & 0,1,0,05,0,1,0,2,0,1,0,7,0,1,0,6,1,1,0,5,]
0,1,5,1,1,10,0,1,30,1,1,50,0,1,10,8,0,1,0,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,]
1,1,7,0,1,30,1,1,50,80,1,0,3,0,1,0,7,0,1,3,0,1,0,7,0,1,5,0,1,0,7,0,1,3,]
0,1,50,1,1,60,0,1,70,1,1,100,0,1,60,100,50,8 &
0,1,0,7,0,1,0,4,0,1,1,0,1,4,0,1,1,0,1,6,0,1,1,0,1,4,0,1,1,0,1,0,1,0,5,0,1,1,0,4,0,1,2,0,3,0,1,1,0,1,0,5,]
0,1,3,0,0,1,2,0,1,1,10,0,1,10,1,10,80,1,0,07,0,1,0,5,0,1,0,06,0,1,0,3,0,1,1,0,1,0,7,0,1,0,6,0,1,0,3,]
0,1,3,0,0,1,2,0,1,1,10,0,1,10,1,10,80,1,0,1,0,1,0,07,0,1,0,04,0,1,0,1,0,1,0,6,0,1,0,5,0,1,0,4,0,1,0,1,]
0,1,2,0,0,1,30,1,1,2,0,0,1,10,1,6,0,1,2,0,0,1,30,100,20,]
80,1,0,06,0,1,0,05,0,1,0,2,0,1,0,6,0,1,2,0,1,0,6,0,1,4,5,0,1,0,6,0,1,2,0,1,0,6,0,1,0,05,0,1,0,2,0,1,0,7,0,1,0,6,0,1,0,5,0,1,0,4,]
0,1,0,0,1,5,1,1,10,0,1,30,1,1,50,0,1,10,1,1,7,0,1,30,1,50,8 &
0,1,0,2,0,1,0,07,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,0,1,0,3,0,1,0,7,0,1,3,0,1,0,7,0,1,5,0,1,0,1,]
0,1,0,0,1,50,1,1,60,0,1,70,1,1,100,0,1,60,100,50,8 &
0,1,3,0,1,0,7,0,1,0,4,0,1,1,0,1,4,0,1,1,0,1,6,0,1,1,0,1,4,0,1,1,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,]
0,1,3,0,0,1,2,0,1,1,10,0,1,10,1,10,0,1,30,0,1,20,1,1,10,0,1,10,1,10,8 &
0,1,0,07,0,1,0,5,0,1,0,06,0,1,0,3,0,1,1,0,1,0,7,0,1,0,6,0,1,0,3,0,1,0,1,0,1,0,07,0,1,0,04,0,1,0,1,0,1,0,6,0,1,0,5,0,1,0,4,0,1,0,1,]
0,1,2,0,0,1,30,1,1,2,0,0,1,6,1,7,0,1,10,0,1,20,100,10,8 &
0,1,0,06,0,1,0,05,0,1,0,2,0,1,0,6,0,1,2,0,1,0,6,0,1,0,05,0,1,0,2,0,1,0,5,0,1,0,2,0,1,0,1,0,1,0,5,0,1,1,0,1,2,0,1,3,0,1,5,]
0,1,0,0,1,30,0,1,50,0,30,1,1,10,0,1,20,1,10,0,50,1,30,0,7,100,5,8 &
1,0,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,0,1,0,03,0,1,0,07,0,1,0,3,0,1,0,07,0,1,0,5,0,1,0,07,]
0,1,6,0,1,7,0,6,1,1,4,0,1,7,0,6,1,4,1,5,0,30,0,10,100,5,8 &
0,1,0,3,0,1,0,07,0,1,0,02,0,1,0,06,0,1,0,2,0,1,0,06,0,1,0,05,0,1,0,2,0,1,0,5,0,1,0,2,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,]
0,50,1,30,0,30,1,1,10,0,1,20,1,10,0,50,1,30,0,7,100,5,8 &
0,1,1,0,1,0,5,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,0,1,0,03,0,1,0,07,0,1,0,3,0,1,0,07,0,1,0,5,0,1,0,07,]
0,1,6,0,1,7,0,10,1,1,6,0,10,0,1,6,0,1,6,0,1,2,0,0,1,30,0,20,0,7,100,5,8 &
0,1,0,3,0,1,0,07,0,1,0,02,0,1,0,06,0,1,0,2,0,1,0,45,0,1,0,6,0,1,0,45,0,1,0,2,0,1,0,06,0,1,0,05,0,1,0,2,0,1,0,7,0,1,0,6,0,1,0,5,0,1,0,4,]
0,1,0,0,1,5,1,1,10,0,1,30,1,1,50,0,1,10,1,1,7,0,1,30,1,50,8 &
0,1,0,2,0,1,0,07,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,0,1,0,3,0,1,0,7,0,1,3,0,1,0,7,0,1,5,0,1,0,7,]
0,1,0,0,1,50,1,1,60,0,1,70,1,1,100,0,1,60,100,50,8 &
0,1,3,0,1,0,7,0,1,0,4,0,1,1,0,1,4,0,1,1,0,1,6,0,1,1,0,1,4,0,1,1,0,1,0,1,0,1,0,5,0,1,1,0,1,2,0,1,3,0,1,5,]
0,1,30,0,1,20,1,1,10,0,1,10,1,10,8 &
1,0,0,1,0,06,0,1,0,3,0,1,1,0,1,0,7,0,1,0,6,0,1,0,3,]
0,1,30,0,1,20,1,1,10,0,1,10,1,10,8 &
0,1,0,1,0,1,0,07,0,1,0,04,0,1,0,1,0,1,0,6,0,1,0,5,0,1,0,4,0,1,0,1,]
0,1,20,0,1,30,1,1,20,0,1,6,1,7,0,1,10,0,1,20,0,1,10,0,1,30,0,1,20,0,1,10,1,7,0,5,1,50,8 &
0,1,0,06,0,1,0,05,0,1,0,2,0,1,0,6,0,1,2,0,1,0,6,0,1,0,05,0,1,0,2,0,1,0,5,0,1,0,2,0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,]
0,1,0,05,0,1,0,2,0,1,0,5,0,1,0,2,]
0,10,1,1,100,0,30,0,1,300,0,50,1,1,500,0,10,0,1,100,8 &
0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,3,0,1,0,5,0,1,1,0,1,0,5,]
0,7,1,1,70,0,30,0,1,300,0,50,1,1,500,0,50,0,1,500,8 &
0,1,0,03,0,1,0,07,0,1,0,3,0,1,0,07,0,1,0,5,0,1,0,07,0,1,0,3,0,1,0,07,]
0,60,1,1,600,0,70,0,1,700,0,100,1,1,1000,0,60,0,1,600,8 &
0,1,0,04,0,1,0,1,0,1,0,4,0,1,0,1,0,1,0,6,0,1,0,1,0,1,0,4,0,1,0,1,]
0,50,100,500,0,1,30,0,1,20,8 & 0,1,0,1,0,1,0,5,0,1,1,0,1,2,0,1,3,0,1,5,1,0,]
0,10,1,1,6,0,10,0,1,6,0,10,1,6,0,1,30,0,1,20,8 &
0,1,0,06,0,1,0,3,0,1,0,6,0,1,0,3,0,1,1,0,1,0,3,0,1,0,05,0,1,0,3,]
0,10,1,1,6,0,10,0,1,6,0,10,1,6,0,1,20,0,1,30,8 &
0,1,0,04,0,1,0,1,0,1,0,4,0,1,0,1,0,1,0,6,0,1,0,1,0,1,0,4,0,1,0,1,]
0,20,1,1,4,5,0,1,6,0,7,1,5,0,1,10,0,1,20,8 &
0,1,0,2,0,1,0,6,0,1,2,0,1,0,6,0,1,0,05,0,1,0,2,0,1,0,5,0,1,0,2,]
0,10,0,5,1,3,0,50,0,1,30,0,40,0,1,20,0,10,1,30,0,20,0,1,7,0,10,0,1,6,8 &
0,1,0,1,0,1,0,5,0,1,1,0,1,0,5,0,1,0,06,0,1,0,3,0,1,0,6,0,1,0,3,]
0,10,1,6,0,7,0,1,5,0,6,0,1,4,0,4,0,5,5,1,10,0,4,0,5,5,1,20,0,50,0,30,0,10,1000,5,8 &
0,1,0,04,0,1,0,1,0,1,0,4,0,1,0,1,0,0,1,0,0,5,1000,1
```

# 歌曲例子

## 《映山红》

do=B,s=60,0.1,0.1,0.1,0.5,0.1,0.4,0.1,0.3,0.01,0.1,0.01,0.07,1,0.05,0.1,0.07,0.1,0.1,0.1,0.4,0.01,0.4,0.01,0.3,0.1,0.1,  
0.01,0.07,0.11,0.1,|  
0,500,0.01,200,0,600,0.11,300,|  
0.1,30,0.1,30,0.1,30,0.1,10,0.01,20,0.11,30,0,60,1,300,& 0,0.6,0.1,10,3,0,0.6,0.1,10,3,|  
1,6,0.1,10,0.1,20,0.01,20,0.11,10,0.001,300,0.001,200,0.11,100,& 0,0.3,0,0.6,10,1,0,0.3,0,0.6,10,1,|  
0.1,6,0.1,10,0,30,0,60,0.1,300,0.1,10,0.001,20,0.001,30,0.11,20,0,200,0.1,60,0.1,30,&  
0,0.6,0.1,10,3,0,0.4,0,6,10,2,|  
0.1,6,0.1,30,0,20,0,60,0.01,200,0.01,10,0.1,6,0.01,6,0.11,5,1,0,& 0,1,0,0.6,10,0.3,0,0.7,1,0.5,1,0.05,|  
0.1,0,0,10,0.1,3,0.1,0,0,10,0.1,3,0.1,0,0.1,3,0.1,5,0.1,6,& 0.1,1,0.01,1,0.01,0.6,0.1,0.3,0.01,0.5,0.01,0.6,10,1,|  
0.1,0,0,20,0.1,6,0.1,0,0,20,0.1,6,0.1,0,0,10,0.1,60,0.1,50,0.1,30,& 1,2,0.1,2,0.1,1,0.01,2,0.11,3,1,0,|  
0.1,2,0.1,3,0.1,5,0.01,3,0.01,1,0.001,2,0.001,3,0.11,2,0.1,0,0.1,3 & 0.1,0,0,10,0.1,50,0.1,0,0,10,0.1,50,0.1,0,0.1,5,0.1,6,0.1,10,|  
0.1,5,0.1,3,0.1,2,0.01,1,0.01,0.6,10,1, & 0.1,0,0,10,0.1,50,0.1,0,0,10,0.1,50,0.1,0,0.1,3,0.1,5,0.1,6,|  
0,3,0.1,10,0.01,10,0.01,6,0.1,5,0.01,6,0.01,10,0,5,5,0,7,10,30,&  
0.1,0.06,0.1,0.6,0.1,1,3,0.1,0,0.1,0.3,0,0.55,0.1,0.7,0.1,3,|  
0,50,1,10,0,50,0.1,10,0,30,0.1,10,0,60,0,30,10,10,&  
0.1,0,0.1,0.5,0.1,1,3,0.1,0.06,0.1,0.6,0.1,0.1,3,0.1,6,|  
0,10,0.1,30,0.1,60,0,30,0.1,50,0.01,30,0.01,10,0,6,1.1,20,0.1,30,&  
0.1,0.1,0.1,0.6,0.1,1,3,0.1,0,0.1,0.6,0,2,0.1,4,0.1,6,|  
0,7,0.1,50,0.1,30,0,20,0.1,6,0.01,10,0.01,6,0,5,10,10,&  
0,2,1,0.5,0,0.6,0,1,1,3,0.1,0.1,0.1,0.5,0.1,0.6,0.1,1,|  
0.1,6,0.1,30,0.1,20,0.1,10,0.001,6,0.001,5,0.11,3,0.1,0,0.1,5,&  
0.1,0.06,0,0.6,0,1,1,3,0,0.6,0,1,0.1,3,0.1,0.1,0,0.5,0,0.6,1,1,0,0.5,0,0.6,0.1,1,|  
0.1,6,0.1,20,0.01,20,0.01,10,0.1,6,10,5,&  
0.1,0.02,0,0.6,0,1,1,2,0,0.6,0,1,0.1,2,0.1,0.05,0,1,0,2,1,5,0,1,0,2,0.1,5,|  
0.1,0.6,0.1,3,0.1,2,0.1,1,0.001,0.6,0.001,0.5,0.11,0.3,0.1,0,0.1,0.5,&  
0.1,0,0,10,0.1,30,0.1,0,0,10,0.1,30,0.1,0,0,3,0,5,0.1,6,0,3,0,5,0.1,6,0.1,0,|  
0.1,0.6,0.1,2,0.1,2,0.01,1,0.01,0.6,0.01,0.5,0.11,0.6,1,0,&  
0.1,0,0,20,0,6,0.1,4,0,20,0,6,1,4,1,0,0,30,1,60,|  
0.1,60,0.1,300,0.1,200,0.1,100,0.001,60,0.001,50,0.11,30,0.1,0,0.1,50,&  
0,0.1,10,0.5,0,0.1,10,0.3,|  
0.1,60,0.1,200,0.01,200,0.01,100,0.1,60,0.01,50,0.11,60,0,300,1,600,&  
0,0.06,10,0.4,0.1,10,0.5

# 歌曲例子

## 《斗牛士之歌》

do=F,s=120,0,5,1,3,0,3,0.11,6,0.01,5,0,3,1,1,0,3,1,1 & 0,0.1,1,0.5,0,0.05,1,0.5,0,0.1,1,0.5,0,0.05,1,0.5,  
|  
0,1,0.01,5,0.1,3,0.01,2,0,1,0.11,3,0,1,0,3,0.01,4,0,1,1,3 &  
0,0.1,1,0.5,0,0.05,1,0.5,0,0.1,1,0.5,0,0.05,1,0.5,|  
0,4,1,0.7,0,2,0.11,0.7,0.01,5,0,3,1,1,0,3,1,1,& 0,0.5,1,0.2,0,0.5,1,0.05,0,0.5,1,0.1,1,0.07,|  
0,1,1,0.5,0,0.45,0.11,0.6,0.01,2,10,0.5,& 0,0.3,1,0.06,0,0.2,1,0.02,0,0.07,1,0.05,0,0.07,1,0.05,|  
10.1,2,0.1,6,0.1,5,0.1,4,& 0,0.4,1,0.6,0,0.4,1,0.6,0,0.4,1,0.6,0,0.4,1,0.6,|  
0.001,4,0.011,3,0.1,2,0.1,3,0.1,4,1,3,1,3,& 0,0.1,1,0.6,0,0.1,1,0.6,0,0.1,1,0.6,0,0.1,1,0.6,|  
1,0.7,0.11,3,0.01,3,1,3,0.11,2.5,0.01,4.5,& 0,0.07,0,0.3,1,0.5,  
0,0.07,0,0.3,1,0.5,0,0.07,0,0.45,1,0.6,0,0.07,0,0.45,1,0.6,|  
0,3,1000.1,7,0.03,6,0.03,7,0.03,6,0.1,5.5,0.1,6,0.1,2,0.1,3,1,4,&  
0,0.3,0,0.55,1,0.7,1,0.07,1,0.055,1,0.03,1,0.035,0,0.2,0,0.4,10,0.6,0,0.2,0,0.4,1,0.6. |  
0.1,0,0.1,3,0.1,1,0.1,6,10,5,& 1,0.05,0,0.1,0,0.3,1.1,0.5,0.1,0.3,0.1,0.1,0.1,0.6,|  
0.1,0,0.1,1,0.1,0.5,0.1,4,1,3,0,2,1,0.7,1,1,0,3,0.11,10,0,3,0.01,10,0,3,1,10,&  
100,0.5,0,0.4,1,0.05,0,0.3,1,0.1,0,0.05,0.11,0.01,0,0.05,0.01,0.01,0,0.05,1,0.01

# 注释的记号和使用

注释记号是成对的，“/\*”代表一个注释的开始，“\*/”代表一个注释的结束。在乐谱文本中如果有一些注释，则注释中的内容将被程序所忽略。例如：

**1,1,1,2,1,3,/\*1,4,1,5,1,6\*/**

则多来咪会演奏出来，而发梭拉被注释上了，就不会演奏。

# 注释的作用

- 可以在录入乐曲的时候，将已经录好正确的部分先注释起来，然后录入新的部分，在检查的时候也光听新的部分，节省时间。
- 在练歌的时候可以将容易的部分都注释上，光留下难的部分，反复练习。
- 可以在乐谱中任何位置加进自己的评价，例如，老师对学生的作业的批改，评语，等等。

# 程序窗口中各按钮的作用

- “练音模式”按钮

每单击一下，程序就将下一乐句按12个调教唱一遍，然后再将更下一个乐句按12个调教唱一遍，循环往复，直至单击了其它按钮为止。

# 程序窗口中各按钮的作用

- “教歌模式”按钮

单击之后，程序将当前乐曲按当前的速度和调，每一次教一句的模式进行重复，循环往复，直到单击了其它按钮为止。

- “暂停演奏”按钮和“继续演奏”按钮

单击“暂停演奏”将暂停演奏当前的乐曲，如果再单击“继续演奏”，则将接着上面暂停的地方继续演奏。

# 程序窗口中各按钮的作用

- “演奏全部” 按钮

单击之后，程序将当前乐曲演奏一遍，然后停止。

- “反复演奏” 按钮

单击之后，程序将反复演奏当前乐曲直到程序退出或者单击了其它按钮。

- “恢复系统” 按钮

将当前的乐曲恢复成程序刚开始的练习曲。



# 程序窗口中各按钮的作用

- “装入”按钮

单击之后，程序将当前编辑框中的乐谱装入程序，如果语法有错，将弹出对话框告警，如果语法正确，则此乐谱就成为当前的乐曲。

- “清空”

单击后清空编辑框中的内容。

# 程序窗口中各按钮的作用

- “存为文件” 按钮

单击之后将当前编辑框中的内容保存为文本文件。

- “读入文件” 按钮

单击后将存有乐谱的文本文件的内容读入到编辑框，这时再单击“装入”按钮将演奏文件的内容。

# 教唱歌软件的学术意义

- 减轻教唱歌老师的劳动，常用的练习曲和歌曲一次录入后，就可以反复使用，教歌的时候不必专注弹琴。
- 对教唱歌老师的要求降低，可以不会弹琴，也能够教歌。
- 而学歌的人有机会听到声音和节拍都准确的声音。

# 教唱歌软件的学术意义

- 新的乐谱编码完全是文本字符串，机器（计算机）和人都容易读懂，作的曲可以立即播放。
- 这种文本字符串方便通信，可以直接在电子邮件和聊天室传送。
- 学生可以将自己作的曲直接发给老师，老师只需要拷贝粘贴就可以听到学生作的曲，并用注释的办法给学生改作业。

# 教唱歌软件的学术意义

- 乐谱可以直接放在网页中，只需要用拷贝和粘贴的办法就可以取过来用程序播放。
- 文本型的字串乐谱可以方便网上搜索，使得按乐谱片断查找音乐成为可能。
- 这样的文本乐谱还可以直接编写在一些音乐研究生的学术论文中。阅读论文的人只要从论文中粘贴就可以听到论文中写到的音乐。

# 教唱歌软件的学术意义

- 软件极为简单，轻便，总共几百K的内容，任何一个U盘都可以装下，任何一个低档的手提电脑都可以装下，携带一个手提电脑到处走，毕竟比携带一架钢琴或者电子琴到处走方便。
- 学声乐的学生不必非要呆在琴房练习，带一部手提电脑到野外风景优美的地方，播放练习曲，就可以练习（但是要防止被盗窃）。

# 教唱歌软件的学术意义

- 做声乐家教的教师不必提着一架钢琴或者电子琴到处跑，只需要带一个手提，就可以去用户那里教小孩唱歌了，进行一些基础训练，软件还可以留在那户人家电脑里。

# 教唱歌软件的学术意义

- 此软件对于各种老年青年少年的合唱队的训练很有用处。一个合唱有多个声部，很容易地将每一个声部编为不同的陈谱文件，每一个声部的成员集中只听他们所负责的声部的声音，并反复训练，直到特别熟练，最后再到一起整合，将产生质量很高的合唱效果。



# 教唱歌软件的学术意义

- 合唱队指挥可以根据自己的合唱队成员的嗓音条件，很容易地就调节了适合自己队伍的声调。比如，如果高音的人才少，就将乐谱降低一到两个调。
- 合唱队指挥可以对已有乐谱的每一个乐句的速度都进行精心的设计和调节，以达到自己独有的指挥风格。
- 此软件完全可以用作合唱和独唱表演时的伴奏工具。用它伴奏的表演不可能假唱。

# 教唱歌软件的学术意义

- 之所以要编写教唱歌软件，作者并不是音乐大师，而是相当的外行。而声音属于信息，作者的研究方向是信息论，尤其是对编码学感兴趣。
- 而陈谱的编码在信息论中的一个突破在于，它是人类首先产生了“浮点数编码”的思路，而在这之前，所有的编码，包括加密原理，都是从“整数编码”的角度思考的。

# 教唱歌软件的学术意义

- 此外，作者在语音识别方面，对于基音识别也产生了一定的中间结果，有可能在近几年内，对人的基音有较准确的识别。
- 陈谱的编码也是为了建立一个歌曲的方便检索的数据库，进一步的设想就是，当一个人对着话筒唱一句歌，就能够被基音识别程序识别成一段乐谱，从数据库中检索到相当的歌曲，然后播放出来。

# 教唱歌软件的学术意义

- 到现在为止，网络上的各种搜索引擎，对于音乐搜索的功能还是很广泛的，通常都是根据曲名，作者，公司名，歌词等进行检索，但是，对着话筒唱一句就能够检索，这样的事情在国内外的各搜索引擎中确实还没有。因此这是一个重要的科学研究的方向。

# 进一步的研究方向和可能的问题

- 教唱歌软件及相应的陈谱编码刚刚诞生，也暂时没有发表论文，是今年国庆后产生的主意的一个产物，因此有各种缺陷也属于必然。因此软件及编码都有可能需要改善。此外在怎样应用方面，编写怎样的练习方面，也有应用方面的课题。这些也许可以形成一些跨学科的应用性研究？是不是搞声乐教学的人能够和软件工程人员强强联合？能不能弄到一个相应的研究奖项？

推荐你试试：**Cool Edit Pro 2.0** 有中文汉化注册版，还有教程。功能强大，操作简单，录音棚和翻唱爱好者都使用它作为后期制作软件。网上搜索就有下载。我就最流行的音乐制作软件进行一下分析比较，供参考。

**1、cakewalk** 提到音乐制作软件，不能不提**cakewalk**，在2002年以前，可以这么说，**cakewalk**就成了电脑音乐制作软件的代名词。你要不知道这个软件，那你就不要谈电脑音乐了。**cakewalk**原来的版本只支持**midi**编辑，后来，增加了音频处理功能，名字也就变成了**sonar**，国内人俗称声纳。目前最高版本是**sonar 4.0**。优点：几乎包括了所有音乐人所需要的电脑音乐制作的功能。如果你是既懂英文，又懂五线谱的专业音乐人士，可以这么说，**sonar**几乎成为了你的必然选择。缺点：只有五线谱版，没有简谱版。只适合整天呆在录音棚里的专家使用。另外，因为目前还只有英文版，（也见有国内汉化版，不过，汉化不完全，导致容易出错），所以，你要选择该软件前，你得掂量一下你自己的分量。另外，如果没有**midi**键盘等**midi**输入设备，你是无法使用**sonar**制作出一首完整歌曲的。

**2、cubase sx** **cubase sx**可以说是引导了**midi**与音频混合制作的先河，就因为有了**cubase sx**的出现，才撼动了**cakewalk**在音乐制作领域的绝对领导地位。**cakewalk**也因为**cubase**的出现，才象一只庸懒的兔子，奋起直追，推出同样带有音频功能的**sonar**，这场音乐制作软件领域的龟兔赛跑结果目前还不得而知。说到**cubase sx**的优点和缺点，你可以完全参考**cakewalk sonar**。

**3、fruit loops** 就是我们俗称的水果，**loop**，循环的意思，还加个**s**，成了**loops**，我理解为不断不断的重复。重复什么？重复节奏、重复旋律。如果你是一位**DJ**，那么我告诉你，你非得学会**fruit loops**不可。否则，你就该失业。优点：非常适合**DJ**，尤其适合制作鼓节奏。缺点：如果是给**DJ**用，可以说没有缺点。

**4、作曲大师** 这是一款国产作曲软件，也是仅有的几款国产音乐制作软件中的一款，作曲大师是一款**midi**制作软件 不带音频处理功能。而且，有简谱和五线谱版，简谱版的简谱特性是该软件比较可取的部分。如果你使用五线谱，和同样是五线谱的**cakewalk**来比的话，可以说不在同一个级别上。所以，我这里谈的主要是作曲大师的简谱版。而且，我也希望作曲大师先把简谱版做好，做精。优点：支持简谱符号比较全面，操作比较简单。缺点：对于音乐业余爱好者，制作音乐比较困难，对于音乐专家，又无法和**cubase**与**sonar**相比。感觉有点高不成低不就。

**5、天才音乐家** 天才音乐家是我在上周才发现的这么一款软件，该软件宣传不够，有点养在深闺人未识的感觉。发现该软件，我可以用欣喜来形容。并不是该软件有多么专业，而是这款软件的几个闪光点。让我发现了天才音乐家软件的市场定位的独特。我明显感觉，天才音乐家是为业余音乐爱好者而制作的，绝非为专业音乐家所开发。业余音乐爱好者最大的特点是音乐专业水平不高，制作电脑音乐的过程中，配器可以说是非常重要的，光靠认识几个**do re mi**是解决不了问题的。天才音乐家独特的自动配器功能，很好的为业余音乐爱好者解决了这个难题。你只需要点点鼠标，输入音乐的主旋律，它就能为你的歌曲配上和弦和打击乐器。虽然在专业音乐家眼里，这些可以说不屑一顾。但是，对于广大业余选手来说，无疑是最大的亮点。刚下载到这个软件，被它可以说很粗糙的界面所打击。几乎没有继续使用的冲动。但是，耐着性子继续使用5分钟，我就感觉到了这是一个超级好玩的音乐玩具。优点：简单 简谱 自动配器，自动伴奏 超级傻瓜 缺点：界面可以说太

主要内容结束  
谢谢大家！