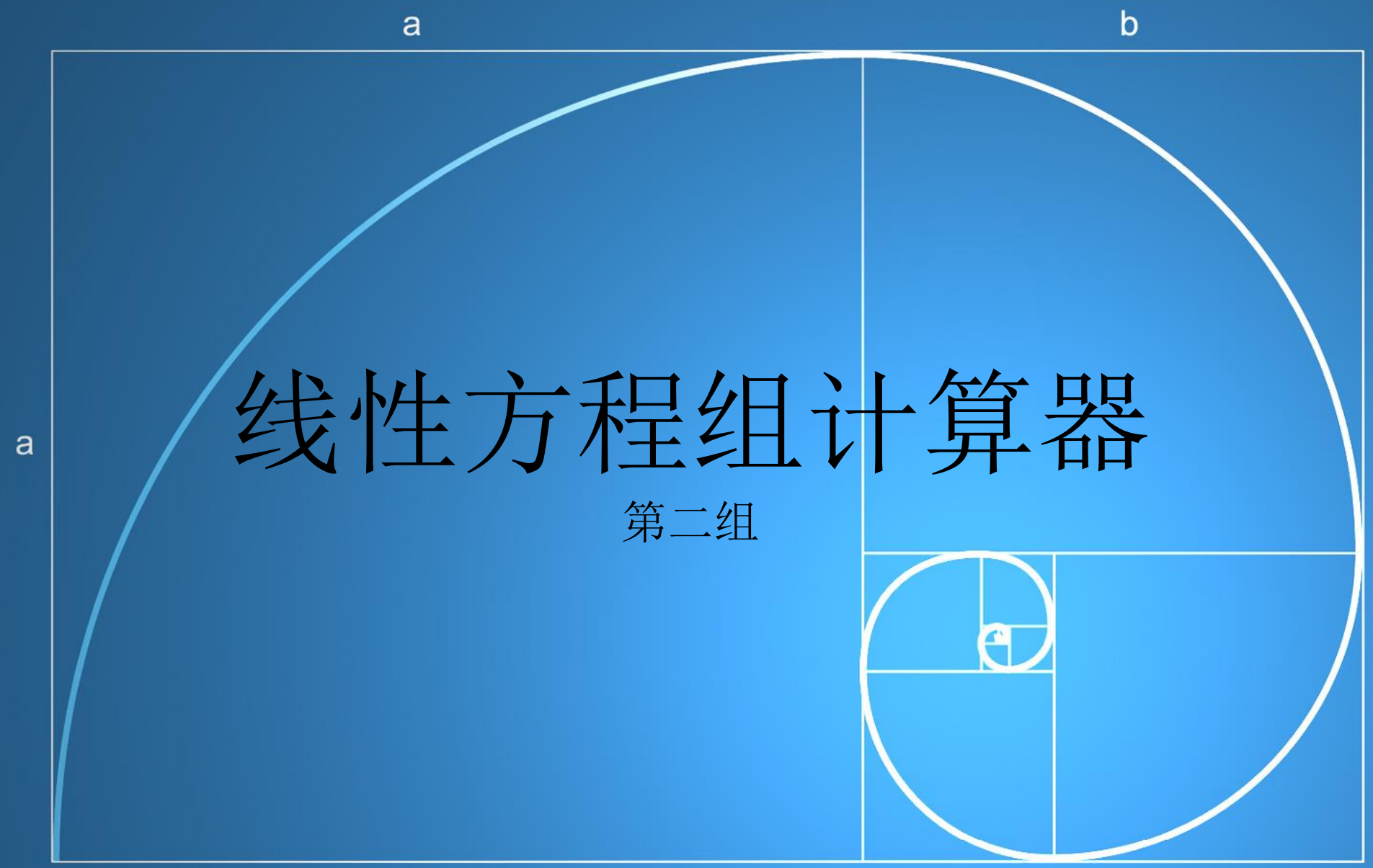


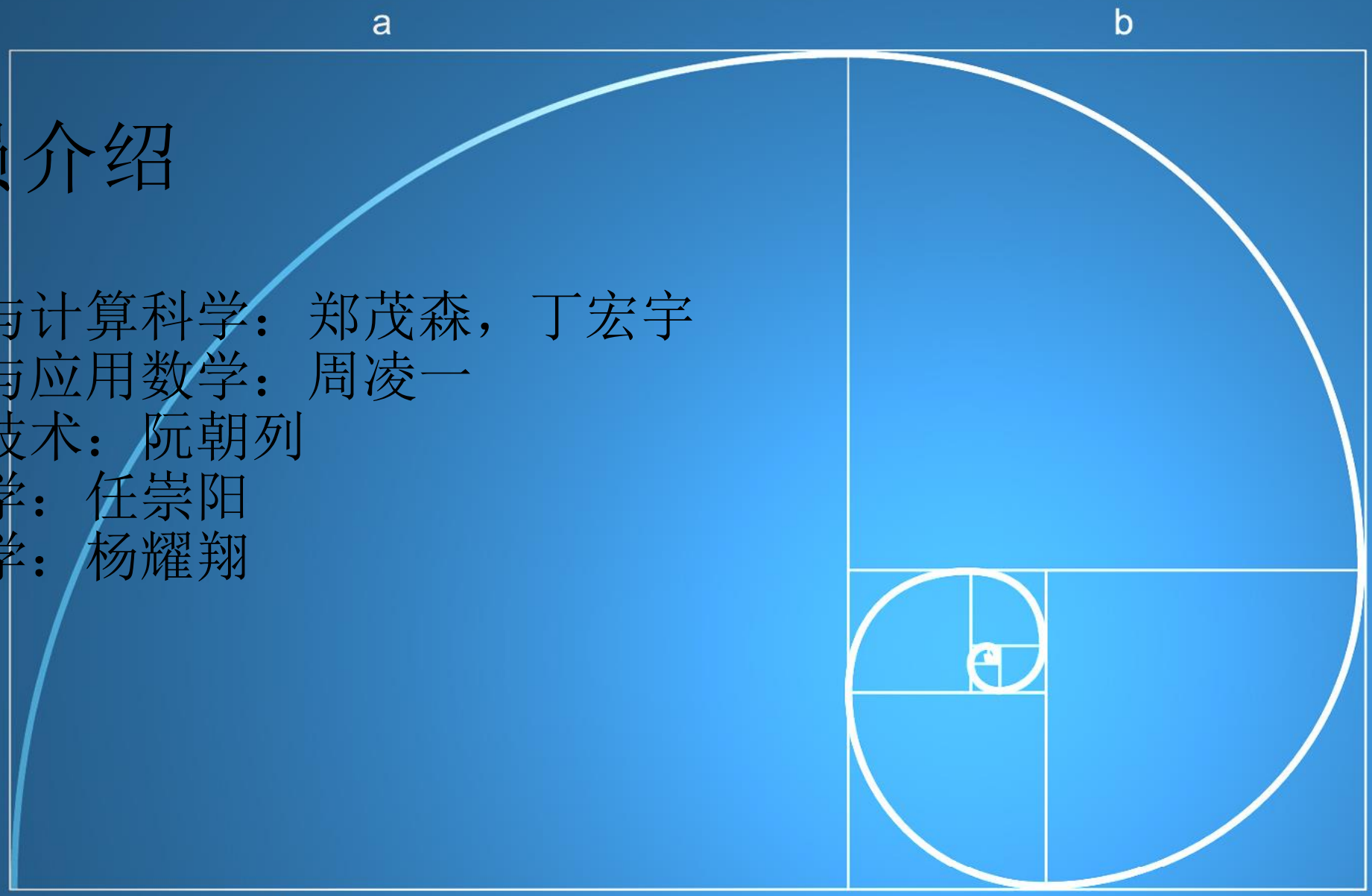
线性方程组计算器

第二组

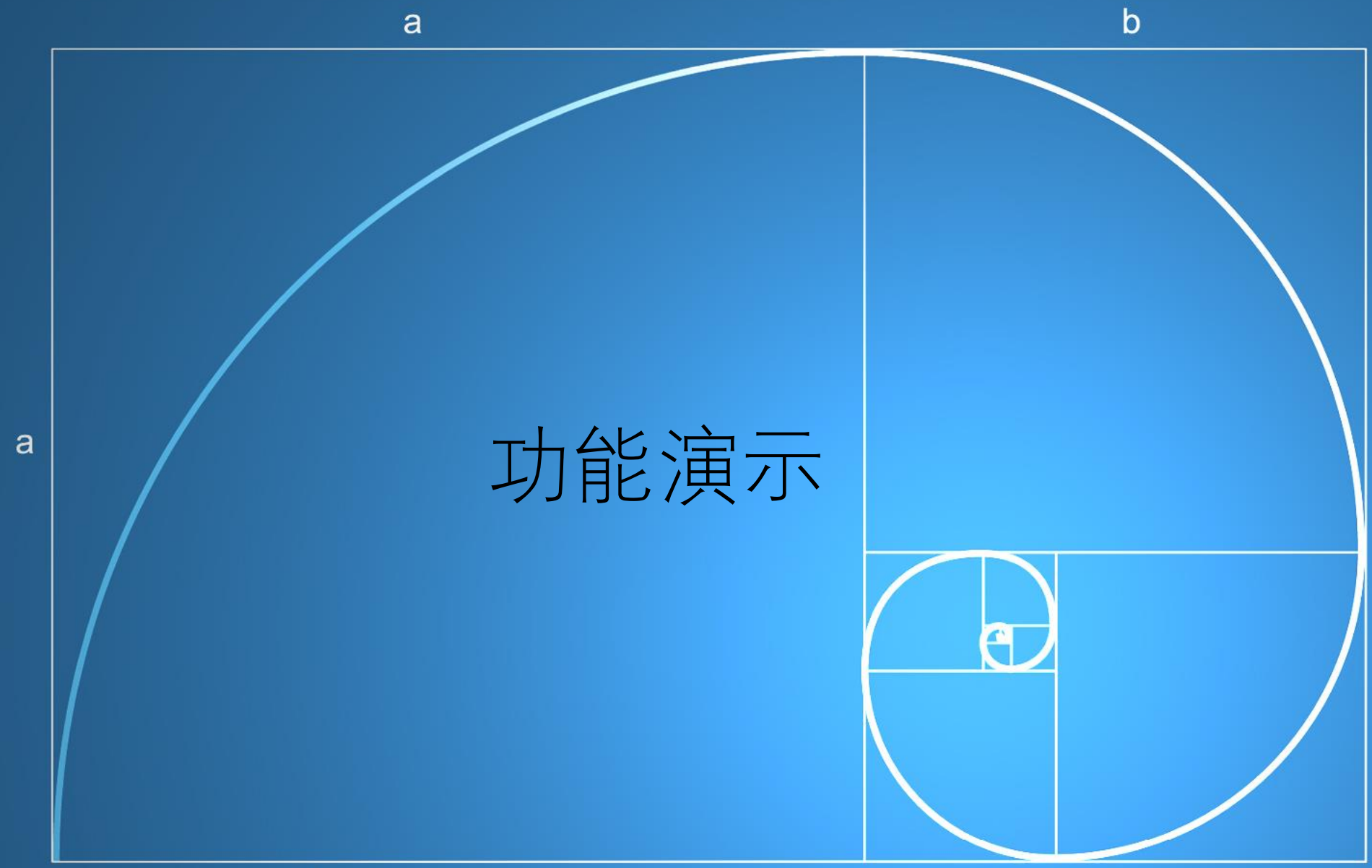
$$\frac{a+b}{a} = \frac{a}{b} = \varphi \approx 1{,}61803$$

成员介绍

信息与计算科学：郑茂森，丁宏宇
数学与应用数学：周凌一
生物技术：阮朝列
天文学：任崇阳
物理学：杨耀翔



$$\frac{a+b}{a} = \frac{a}{b} = \varphi \approx 1{,}61803$$



$$\frac{a+b}{a} = \frac{a}{b} = \varphi \approx 1{,}61803$$

code.py - D:\Mia\大二上\零基础学编程-python\小组项目\code.py (3.6.2)

File Edit Format Run Options Window Help

```
@author: angelshare
"""

from PyQt5.QtWidgets import (QWidget, QToolTip, QPushButton, QApplication,QDeskt
QMessageBox, QGridLayout, QLabel, QFrame,QMainWindow,QAction,qApp,QLineEdit,QInp

from PyQt5.QtGui import QFont, QIcon
from PyQt5.QtCore import QCoreApplication, Qt
import sys
from numpy import *
import copy

def LUdecomp(a):
    n = len(a)
    for k in range(0,n-1):
        for i in range(k+1,n):
            if abs(a[i,k]) > 1.0e-9:
                lam = a [i,k]/a[k,k]
                a[i,k+1:n] = a[i,k+1:n] - lam*a[k,k+1
                a[i,k] = lam
    return a

def LUsolve(a,b):
    n = len(a)
    for k in range(1,n):
        b[k] = b[k] - dot(a[k,0:k],b[0:k])
    b[n-1] = b[n-1]/a[n-1,n-1]
    for k in range(n-2,-1,-1):
       b[k] = (b[k] - dot(a[k,k+1:n],b[k+1:n]))/a[k,
    return b

def Gausselimination(m):
    if type(m)!=list and type(m)!=tuple:
        return('valuerror')
    m=double(m)
    m=mat(m)
    a=m.shape[0]
    b=m.shape[1]
    if linalg.det(m[:,0:a])==0:
        return('系数矩阵奇异')
```

Ln: 14 Col: 0

线性方程组计算器

文件

欢迎使用

请选择方法

高斯消元法 三角分解法 追赶法

Browser

code.py - D:\Mia\大二上\零基础学编程-python\小组项目\code.py (3.6.2)

File Edit Format Run Options Window Help

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```

Ln: 14 Col: 0

线性方程组计算器

文件

请输入增广矩阵

点击此处输入

输入框 ?

请以列表形式输入：

[[1, 2, 3, 4], [11, 5, 24, 6], [2

OK Cancel

Browser

code.py - D:\Mia\大二上\零基础学编程-python\小组项目\code.py (3.6.2)

File Edit Format Run Options Window Help

```
@author: angelshare
"""

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    b[n-1] = b[n-1]/a[n-1,n-1]
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```

Ln: 14 Col: 0

线性方程组计算器

文件

请输入增广矩阵

点击此处输入

```
[-0.53454404945904177,
4.1428516228748071,
-0.25038639876352398]
```

Browser

总体设计

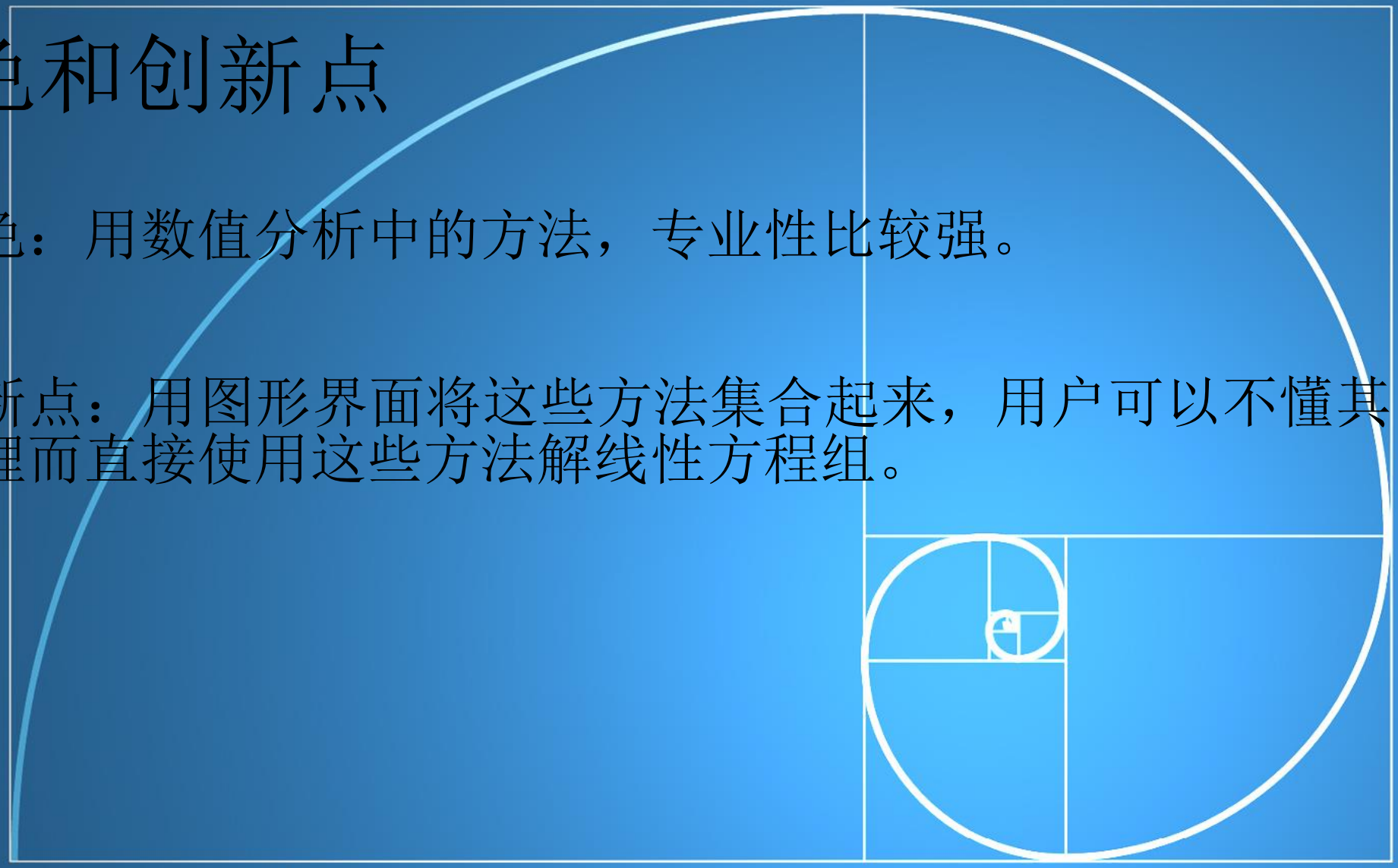
1. 基本思路：用图形界面让用户输入并获得输出。使用数值分析中的解线性方程组的高斯消元法，三角分解法和追赶法编写主要程序，编写过程中使用numpy。

2. 技术难点和解决方案：难点是用PyQt5编写图形界面。上网查询解决。

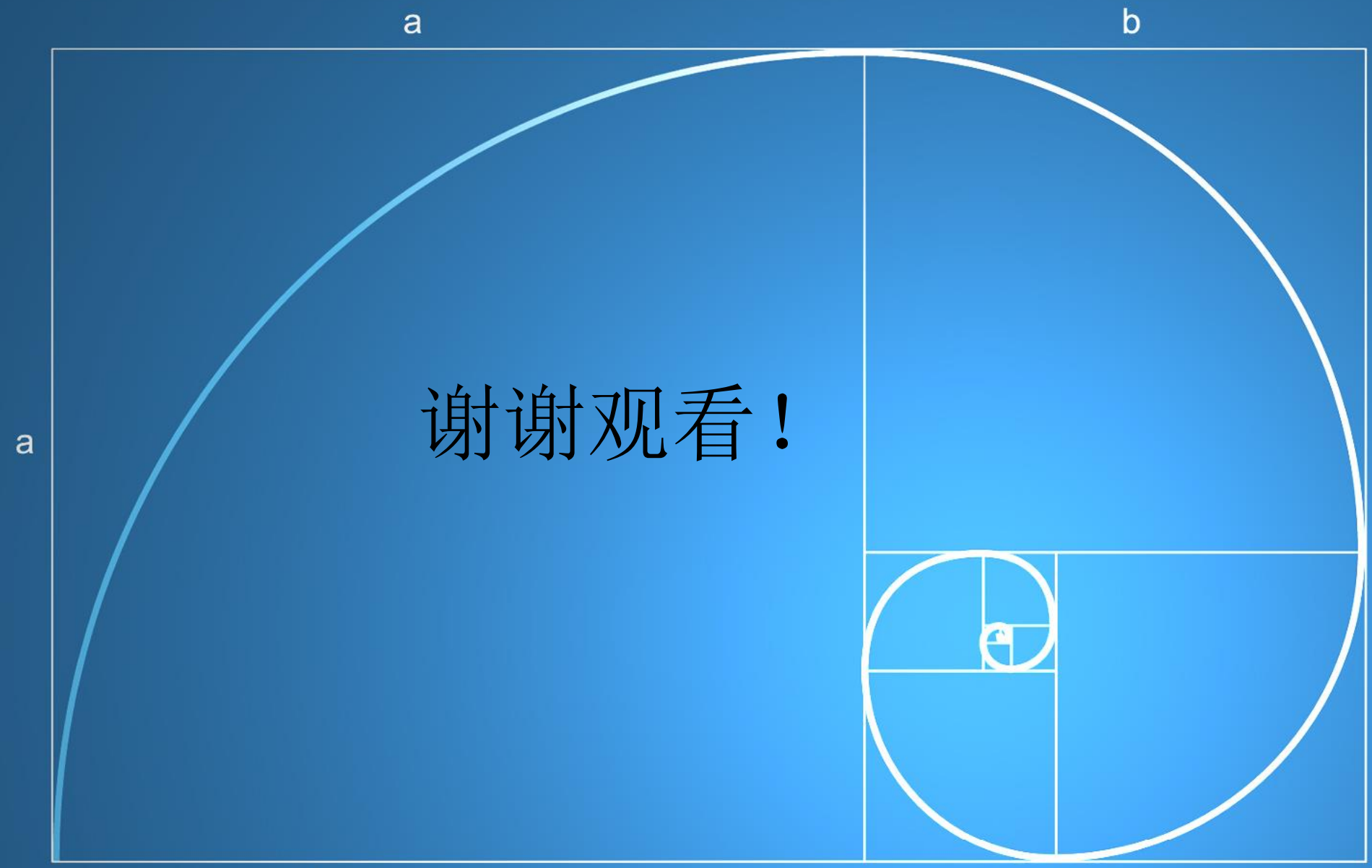
特色和创新点

1. 特色：用数值分析中的方法，专业性比较强。

2. 创新点：用图形界面将这些方法集合起来，用户可以不懂其中的原理而直接使用这些方法解线性方程组。



$$\frac{a+b}{a} = \frac{a}{b} = \varphi \approx 1{,}61803$$



谢谢观看！

$$\frac{a+b}{a} = \frac{a}{b} = \varphi \approx 1{,}61803$$