**No.42**

# Producing Class Materials with KETCindy

## Programming Styles, Creating Portal Site and the Evaluation -

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## Purpose of my talk

We shall produce a class material with figures on the standard form of the parabola as follows:

A parabola has the focus $\mathbf{F}(p,\ 0)$ and the directrix $l : x = -p$. The standard form of the parabola satisfies the equation

$$y^2 = 4px.$$

## Contents of my talk

- What is K~E~TCindy ?

- LaTeX for class materials

- Making figures using K~E~TCindy

- Conclusion

# What is K<sub>E</sub>TCindy ?

## Producing printed class materials

- Many collegiate mathematics teachers use printed materials in their class.

- Almost all of them use LATEX in order to produce their class materials.

- LATEX can make beautiful formulas.

- However, LATEX itself is somewhat hard to dealing with graphics.

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## Developing KETpic

- Since 2006, KDG (KETpic Development Group) has developed KETpic as a tool to generate LaTeX codes for figures in class materials.

- KETpic uses a mathematical software such as Maple, Mathematica initially, and recently, Scilab, R.

# Developing KETpic

- In 2010, **KETpic** for **Scilab** has been equipped with all functionalities.

- Using **LaTeX** and **KETpic**, teachers were able to produce printed materials with figures easily and on a daily basis.

# Flow chart of KETpic system
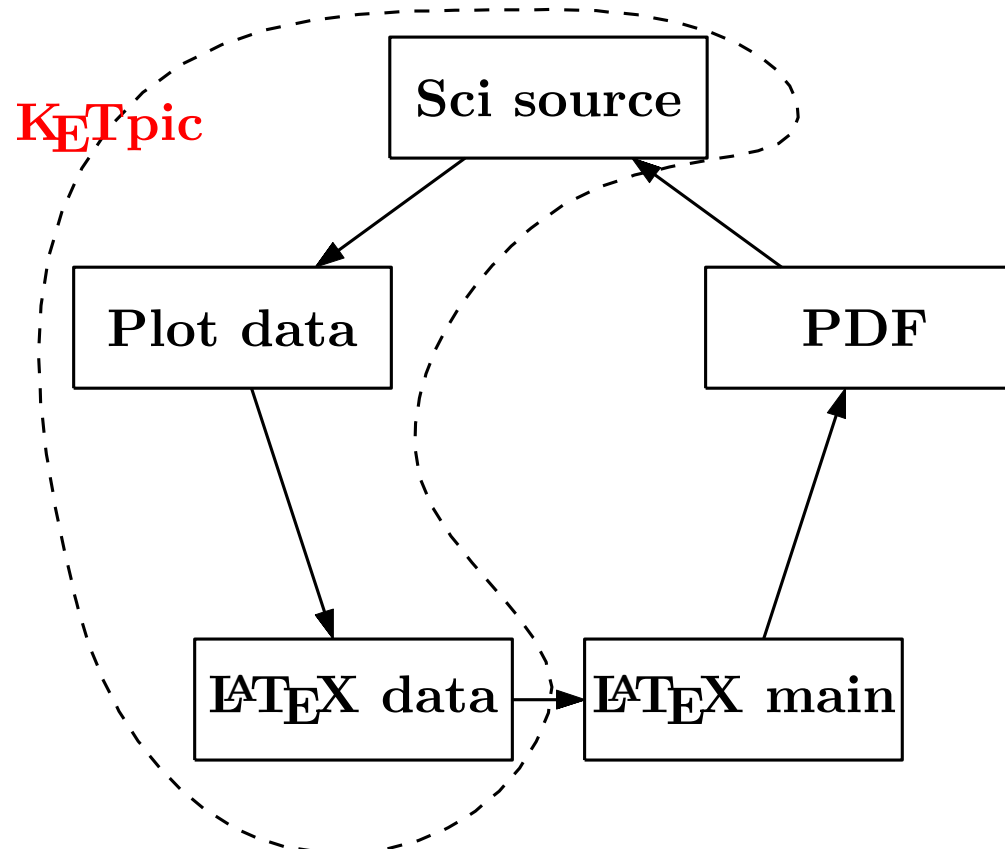


KETpic uses Scilab at the left side and LATEX at the right side.

## Desire for GUI of KETpic

- It was hard for teachers to read the KETpic program made by the other teachers because they wrote it in their own way.

- In 2013, KDG has established with KETpic programming style in order to write readble KETpic scripts.

# Desire for GUI of K<sub>E</sub>Tpic

- However, when teachers use K<sub>E</sub>Tpic, they must write all scripts in the editor before confirming on the screen that the figure is desirable.

- Many teachers have desired a GUI (Graphic User Interface) for use with K<sub>E</sub>Tpic.

## What is Cinderella ?

- **Cinderella** is a DGS (Dynamic Geometry System) package developed by Gebert and Kortenkamp.

- **Cinderella** has two screens; one is the main screen and the other is **CindyScript** editor.

- **CindyScript** is the programming language of **Cinderella**.
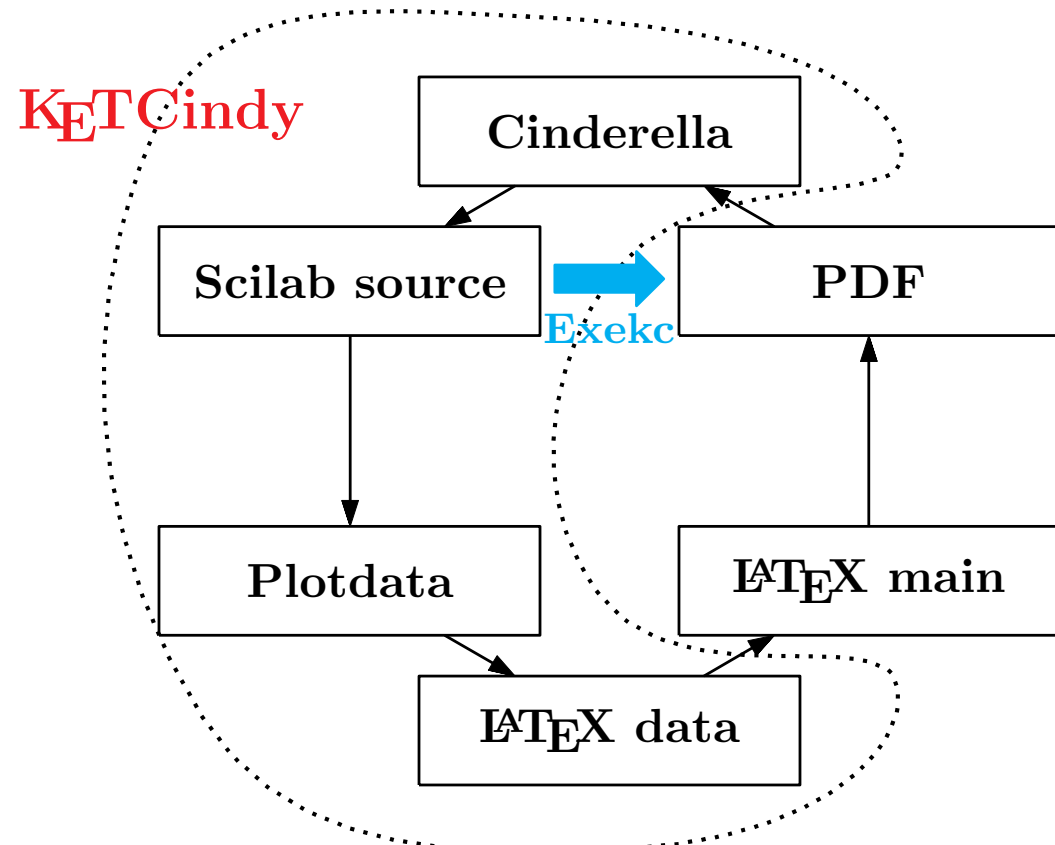
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## Birth of KETCindy

- KDG had been exploring the possibility of using **Cinderella** as a GUI of **KETpic**.

- **KETCindy** is a collaboration of **KETpic** and **Cinderella**. It is a macro package of **CindyScript**.

- The first version of **KETCindy** was released on September 5 in 2014.

# Birth of K<sub>E</sub>TCindy

- The main screen of **K<sub>E</sub>TCindy** works as a GUI of **K<sub>E</sub>TCindy**, and **CindyScript** editor as an editor of **K<sub>E</sub>TCindy**.

- **K<sub>E</sub>TCindy** can be downloaded from the following web page:
  http://www65.atwiki.jp/ketcindy (for Japanese)
  http://www65.atwiki.jp/ketcindy-eng
  (for English, incomplete)

# Flow chart of K_ETCindy system

K_ETCindy

| | Cinderella |
|---|---|

Scilab source  →(Exekc)  PDF

Plotdata

LᴬTᴇX main

LᴬTᴇX data

**K_ETCindy uses only Cinderella.**

# KETCindy can do

| | | | |
|---|---|---|---|
| **s1** | **Geometric Figure** | **s8** | **Calling R** |
| **s2** | **Graph of Function** | **s9** | **Surface** |
| **s3** | **Making Table** | **s10** | **Calling Maxima** |
| **s4** | **Bézier Curve** | **s11** | **Calling Asir** |
| **s5** | **3D Figure** | **s12** | **Calling Fricas** |
| **s6** | **Animation** | **s13** | **Calling Mesthlab** |
| **s7** | **Slide for Presentation** | | **kepic,ketlayer,ketslide** |

**KETCindy has the above 13 sample folders.**

# LaTeX for class materials

## Simplified version of LaTeX

- When **K<sub>E</sub>TCindy** is installed, simplified version of **LaTeX** is also installed in the folder "kettex".

- Class materials should be produced by using **basic packages** because there is a package that affects the other.

# Simplified version of LaTeX

- **Basic packages** of LaTeX are the followings:

  amsmath.sty, amssymb.sty

  graphicx.sty, color.sty

- In order to use KETCindy, "ketpic.sty" is needed.

- To layout figures, the followings are needed:

  wrapfig.sty, ketlayer.sty

## An example of a class material

```
\documentclass{article}
\usepackage{amsmath,amssymb}
\usepackage{graphicx,color,wrapfig}
\usepackage{ketpic,ketlayer}
\setmargin{20}{20}{20}{20}
\begin{document}
    < the main text >
\end{document}
```

## An example of a class material

Open the LaTeX main file.

# Layer environment

- The layout is important for printed class materials.

- Usual LaTeX also lacks to put various components appropriately.

- KDG has developed ketlayer.sty which includes layer environment.

## Layer environment

- In LaTeX main file, sciripts are:

  \begin{layer}{xrange}{yrange}

  \putnotese{xpos}{ypos}{\input{...}}

  \end{layer}

- Other components doesn't change the positions.

- Grids are disappeared if yrange= 0.

## An example of a class material

Open the LaTeX main file.

# Making figures using KₑTCindy

# Header table using KETCindy

We shall produce a LaTeX file "headertb.tex" for the header table using KETCindy.

| Applied Mathematics A | | | | | | 1. Definition of Fourier Series | | Score |
|---|---|---|---|---|---|---|---|---|
| Grade | | Class | | No. | | Name | | |

# Header table using KETCindy

Open to the cinderella file "headertb.cdy".

# Figure using KETCindy

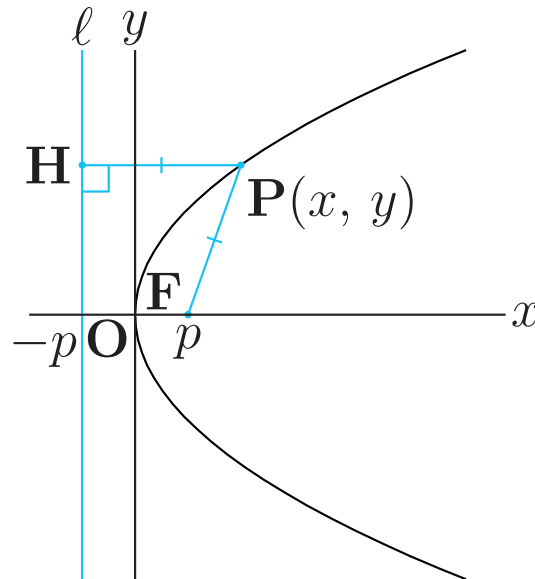We shall produce a LaTeX file "parabola.tex" for the figure using KETCindy.

## Figure using K<sub>E</sub>TCindy

The K<sub>E</sub>TCindy web page for Japanese version is

**http://www65.atwiki.jp/ketcindy**

and the web page for English version is

**http://www65.atwiki.jp/ketcindy-eng**

## Conculusions

- Printed materials are often used in math classes at collegiate level.

- When teachers install K~E~TCindy, they can use LaTeX in order to produce class materials.

- K~E~TCindy makes it easy to make figures and tables inserted into class material.

**Thank you for your attention**