

A woman with dark hair tied in a bun, wearing a light blue denim shirt, is sitting at a large wooden workbench in a workshop. She is looking down at an open notebook and writing with a pink pen. To her left is a silver laptop. The workbench is cluttered with various tools and materials, including a wooden box, a pair of pliers, a small brown object, and some fabric. In the background, there are shelves filled with wooden planks and other workshop items. The lighting is warm and natural, coming from a window on the right.

Group session 28.01.2026

Reading an article

4 A bigenus formula and the proof of Theorem 1.1

We use the same notation and the assumptions as in the previous section. In addition to (A1) and (A2), we assume that (V, D) satisfies the following condition:

(A3) D contains neither a rod consisting of (-2) -curves nor a fork consisting of (-2) -curves.

We estimate $\bar{p}_2$ under the assumptions (A1), (A2) and (A3) (cf. [12, Proposition 3.1]). For a positive integer m , write $\gamma_m = h^0(mK + (m-1)D)$ ([10]).

Lemma 4.1 *We have $h^1(2K + D) = 0$ and $\gamma_2 = K(K + D) + \pi(D) + \chi(\mathcal{O}_V) - 1$.*

Proof. By the Riemann–Roch theorem, $\gamma_2 = h^1(2K + D) + K(K + D) + \pi(D) + \chi(\mathcal{O}_V) - 1$. By Lemma 3.1 and [9, Proposition 2.3], we have $h^1(2K + D) = 0$. $\square$

Let r denote the number of the rational rods of D and t the number of the rational maximal twigs of D . Let ε denote the number of the connected components of D each one of which is an elliptic curve or a cycle of rational curves.

Lemma 4.2 *For an integer m with $m \geq 2$, we have $h^0(m(K + D)|_D) = (m-1)t + \varepsilon + (2m-1)(r + \pi(D) - 1)$.*

Proof. By the Riemann–Roch theorem, $h^0(m(K + D)|_D) = h^1(m(K + D)|_D) + (2m-1)(\pi(D) - 1)$. We have $h^1(m(K + D)|_D) = h^0((1-m)(K + D)|_D)$. Let D' be a connected component of D and C an

1



ARTICLE

On the number of the cusps of cuspidal plane curves

Tono, Keita

Mathematische Nachrichten, 2005-01, Vol.278 (1-2), p.216-221

 PEER REVIEWED JOURNAL

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How do you decipher the papers you find?

Decide on what depth you want to read

From Matt Baker's short text: *How to read a research paper*

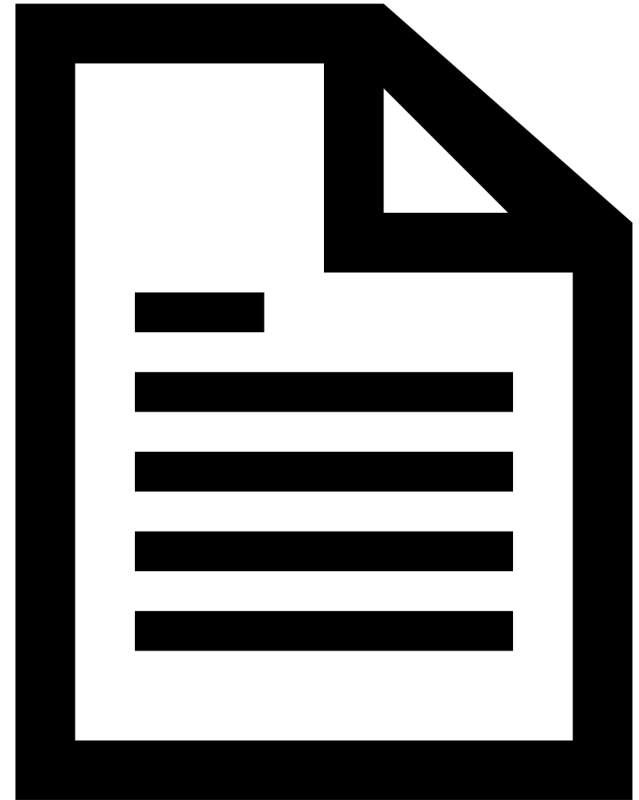
- Speed read – Find main results, get an idea of the context and how it might/might not relate to what you are thinking about. You can do this over your morning coffee!
- Substantial skim – Understand the main definitions, results, maybe some examples. Not checking for correctness or wanting to apply results.
- Deep dive – A paper/book chapter you want to understand deeply and apply (like the main references for your project).

Reading an article

- Read the title, the abstract and the introduction first
- Identify important results / techniques
- Make notes in the margin and underline / highlight
- Work your way through important proofs with pen and paper
- Be patient! It might take years to understand one single article
- Start with the most central source
- Find other sources that can shed light on the result
- Put it away – and pick it up again
- Know when to ask for help from your supervisor!

Critical reading

- Look up the author
- Check journal
- Am I able to verify this?
- Access to data?
- Details left to the reader?
- Ethical issues?
- Publication bias
- What is not commented?





Task

Reading an article

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Find this article

[The Golden String, Zeckendorf Representations, and the Sum of a Series \(tandfonline.com\)](https://tandfonline.com)

The Golden String, Zeckendorf Representations and the Sum of a Series by Martin Griffiths

Read the abstract while I print copies!

Discuss the quality of the abstract together.

Are you clear on what is in the article?

Reading an article

Speed read (5-10 minutes)

- What is the main result in the article?
- How is it mentioned in...
 - The abstract
 - The introduction
 - The main part
- Sketch the structure of the article

Reading an article

Speed read (5-10 minutes)

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Substantial skim (>15 minutes)

- Which objects are involved in the main theorem?
- How and where are the objects defined?
- Can you apply the theorem to an example?
- Can you sketch the proof?
- Which details did you not understand?

Reading an article

Deep dive

- Understand and integrate the theorems and definitions
- Go through the proofs in detail
- Check up on references and cited results
- Pause while reading proofs and try to anticipate the next steps
- Work out detailed and large examples
- Take notes and write summaries
- Explain the article to a friend
- Organize a reading seminar
- Baker recommends 15 mins to a couple of hours per page!

A photograph of three people in a meeting. In the foreground, a woman with long brown hair, wearing a red and black plaid shirt, is looking towards the right. Behind her, a man with a beard and dark hair, wearing a dark blue t-shirt, is also looking towards the right. In the background, a whiteboard is visible with several colorful sticky notes (green, pink, orange) attached to it. The word "Discussion" is overlaid in a white box with black text in the center of the image.

Discussion