Fall in love with the useless?

Hossein Movasati

IMPA,
www.impa.br/∼hossein/

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If the answer is yes then I have to do something useful, at least to justify my salary.

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6. Do research and try to produce new mathematics!

Two fields medalists with two different ways of doing mathematics:

Figure: Pierre Deligne and Shing-Tung Yau

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5. He is tirelessly working so that the others work hard and produce new mathematics.

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1. He retired from IAS (princeton) to dedicate himself to the mathematics of others.
2. He is still able to sit down and do a computation in paper that I was able to do it by computer.
3. He writes letters to mathematicians when they ask his opinion.
4. In the last years he has not written any recommendation letter and he wants to keep this tradition.

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1. We must be scientifically alive. Our neurons must produce new connections.
2. The pleasure of discovering new staff (even if it is discovered before).
3. To improve our teaching (a calculus course in year X can be better than the same course in year X-1).

A mathematician thinking on a piece of pure mathematics=A physicist thinking on a black hole 40 light-years far away.

Discovering ourselves=Discovering our world.

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2. Publishing involves politics.

The worst scenario

After a year of submitting the paper you receive a rejection without a single comment on your article. After a year you get ”We are sorry to say that the expert consulted felt that the paper is not suitable for the Annals. They said that the paper is better suited for a more specialized journal."

Much better scenario

1. Immediate rejection.
2. Rejection with a one or two pages of referee comments. This helps you to improve your article and learn more literature on the topic of your article.
3. You do not obey the referee! The referee wants that you write something wrong!

Let $\mathcal{F}(\mathrm{v})$ be the foliation in $(x_2, x_3, y_2, y_3) \in \mathbb{C}^4$ given by:

$$\mathrm{v} := \left(2x_2 - 6x_3 + \frac{1}{6}(x_2 - y_2)x_2\right) \frac{\partial}{\partial x_2} + \left(3x_3 - \frac{1}{3}x_2^2 + \frac{1}{4}(x_2 - y_2)x_3\right)$$

$$- \left(2y_2 - 6y_3 + \frac{1}{6}(y_2 - x_2)y_2\right) \frac{\partial}{\partial y_2} - \left(3y_3 - \frac{1}{3}y_2^2 + \frac{1}{4}(y_2 - x_2)y_3\right) \tag{1}$$

There is no x_1 variable and the indices for x_i and y_i are chosen because of their natural weights.

The singular set of the foliation $\mathcal{F}(v)$ in the weighted projective space $\mathbb{P}^w := \mathbb{P}^{2,3,2,3,1}$ with the coordinate system $[x_2 : x_3 : y_2 : y_3 : y_1]$ consists of an isolated point and a rational curve:

$$\mathrm{Sing}(\mathcal{F}(v)) = \{0\} \cup \left\{ 27x_3^2 - x_2^3 = 27y_3^2 - y_2^3 = x_3^{\frac{1}{3}} + y_3^{\frac{1}{3}} - 2y_1 = 0 \right\}. \tag{2}$$

We parametrize the curve singularity of $\mathrm{Sing}(\mathcal{F}(v))$ by

$$g : \mathbb{P}^1 \to \mathbb{P}^w, \quad [t : s] \mapsto \left[3t^2 : t^3 : 3s^2 : s^3 : \frac{1}{2}(s + t) \right]. \tag{3}$$

Recall the modular curve

$$X_0(d) := \Gamma_0(d)\backslash\mathbb{H}^*, \quad d \in \mathbb{N}, \tag{4}$$

where $\mathbb{H}^* := \mathbb{H} \cup \mathbb{Q} \cup \{\infty\}$ and

$$\Gamma_0(d) := \left\{ \begin{pmatrix} a_1 & a_2 \\ a_3 & a_4 \end{pmatrix} \in \mathrm{SL}(2, \mathbb{Z}) \middle| a_3 \equiv 0 \pmod{d} \right\}.$$

It has a structure of a compact Riemann surface and points of $\Gamma_0(d)\backslash(\mathbb{Q} \cup \{\infty\})$ are called its cusps.

Theorem

The foliation $\mathcal{F}(v)$ has the following properties:

1. *For each d there is an algebraic curve $S_0(d)$ (defined over $\mathbb{Q}$) in $\mathbb{P}^w$, not contained in Δ and tangent to the vector field v in (1) such that $S_0(d)\backslash\Delta$ is isomorphic to $X_0(d)$ mines cusps. Moreover, these are the only algebraic leaves of $\mathcal{F}(v)$ in the complement of Δ in $\mathbb{P}^w$. The curve $S_0(d)$ intersects Δ only at the points $g([a:-b]),\ d=ab,\ a,b\in\mathbb{N}$ in the curve singularity of $\mathcal{F}(v)$.*
2. *There is an $\mathcal{F}(v)$-invariant set $M_{\mathbb{R}}\subset\mathbb{P}^w$ such that $M_{\mathbb{R}}\cap\Delta=g(\mathbb{P}^1_{\mathbb{R}})$, and $M_{\mathbb{R}}\cap(\mathbb{P}^w\backslash\Delta)$ is a real analytic variety of dimension 5. It contains all $S_0(d)$ and*

$$M_{\mathbb{Q}}:=\cup_{d=1}^{\infty}S_0(d) \tag{5}$$

is dense in $M_{\mathbb{R}}$. Moreover, the foliation $\mathcal{F}(v)$ has a real first integral $B:\mathbb{P}^w\backslash\Delta\to\mathbb{R}$ and $M_{\mathbb{R}}$ is inside $B^{-1}(1)$.

Why you did not cite my article?

Related results actually appear in the work of Freitag and Scanlon. The very explicit character of the further results in the article could be of interest, but to a very restricted audience only.

Your paper does not reach the level of our journal

For these reasons, I consider that a specialized journal or conference proceedings would be a better fit for its publication than a journal like Inventiones.

Backlog

Thank you for submitting your paper to the Publ Math IHES. Unfortunately the backlog situation of the journal is getting worse and worse so that we recently decided not to consider for a while any new submissions except for those (improbable) papers solving a major open problem. Because of this, I think you should submit your paper right now to another journal. I am sorry that your paper arrived during this bad period.

You think that an editor/referee is wrong

After few emails of trying to convince that the editor is wrong I got:
"I do not agree with you and I am glad with the action [rejection of the paper] I took. Let us close the discussion. "

Your own friend does not appreciate your work!

This article constructs a foliation with special properties, and derives some consequences for the modular curves which show up as leaves of this foliation. More specifically, the author constructs a foliation by curves on a weighted projective space of dimension 4 such that: - the algebraic leaves are countable, - they are isomorphic to the (discrete) family of modular curves $X_0(d)$, - the closure of the algebraic leaves (for the transcendental topology) is a real subvariety of dimension 5, - the foliation has a real first integral.

All these properties, except the latter one, are shared by the Picard foliation (defined by one of the Painleve differential equations). For this reason, I do not see why this new example is interesting. Also, all these examples should be related, but the paper contains no attempt in this direction.

In conclusion, from the viewpoint of foliations, I do not see any result of the level of a top journal like Acta Mathematica. As this viewpoint is put forward in the introduction, I suggest to reject this paper.

We do not publish examples

Once I met the previous managing editor of Duke Journal. He said he does not accept articles which only focuses on an example.