REVIEWS ON THE MANUSCRIPT [30]

Reviewer 1:

The structure of the paper is OK.

However, I have several quite serious problems with this paper.

1) The pull-off angle is obviously not constant with the experimental method used.

2) Equation [2] seems to be a vector equation and I don't believe it is true even then.

3) I do not understand equation [5]. It seems to involve energy differences but the right-hand members are not differences. I don't understand where ΔE_{Pot2} comes from and it involves an unknown quantity m_S. The following formula for γ has apparently been derived by setting $\Delta E_{Pot2} = 0$ but this is not stated. It is not clear how the result is used later on. I find it hard to believe that the surface energy of the tape, an intrinsic property would depend on all these external parameters.

4) Formula [6]. From where does it come? It is definitely wrong. Neglecting elastic energy there should be a denominator (1 - cos α).

5) The curve in figure 7 is F = 0.7/sin α and goes to infinity as α goes to zero. However, in figure 8, this singularity has disappeared and the theoretical curve is quite finite for zero angle. It seems to me that the theoretical curve has been displaced both horizontally and vertically just to fit the data. I am utterly confused. I think the blue curve in figure 8 needs a very thorough explanation before I can accept it.

I would not recommend this paper unless it is reworked entirely. There are fundament errors in the theory and explanations are not clear.

Reviewer 2:

Comments:

Limitations of the proposed approach should be discussed (is the angle of pulling the only parameter answering the problem of necessary force? What with other properties of the system?)

Page 4: the equations are littler unclear (mention, that E_0 is a total surface energy, etc.)

Minimal error analysis: the errors are properly mentioned with every numerical result (which is very good), but not discussed and presented on graphs.

The strongest and the weakest aspect of the paper:

The strongest aspect of the paper is the full description of the problem and proposed solution. The article is sound and nearly professional. The description of the model and assumptions is good.

The weakest aspect of the paper is simplicity of the proposed approach. Assumptions made for the problem, nonetheless well described, are way too big.

Despite it is mentioned, that only essential points are discussed (e.g. that only horizontal force component is stretching the tape, which in general is not true), only one parameter (angle) is mentioned as crucial. The proposed model does not take into account the dependence on velocity, which is suggested by experiments. Other parameters and other tapes were not studied.

Organization and Presentation:

The paper is easy to read, with clear, well written structure.

Style:

The article is fairly understandable. There are a number of spelling errors (spell check strongly suggested, e.g. varified => verified, page 5).

Additional Questions:

- Define a “multiple layered problem”
- Describe a slip-stick problem briefly and add some references to it (page 3, top)
- What was used as a force sensor?
- Why only one type of tape was used? it should be described more clearly.

References:

The number of used references is small. In the first reference (Ciccotti et al.) it is unclear, if the reference is a book or journal (please add more information – journal name, page numbers, publisher of the book etc.). The second reference lacks the page number specification.

The references are properly and professionally mentioned throughout the text.

Recommendations:

- Attach a chapter (five sentences approx.) with a discussion of limitations of your solution (the description of limitations is scattered through the article)
- remember, that the article will be printed in gray-scale (you may adjust the contrast of the pictures and photos a little)
- write two-three sentences describing the sources of the errors in the experiments
- Please add the details of the references, and possibly, URLs.
- Add your affiliation at the beginning of the article
- Describe a slip-stick problem briefly and add some references to it
- In conclusions, if you mention something was explained, repeat it briefly – this section is just the place for such information.

Summary:

The manuscript is recommended for publication. A small number of revisions is necessary.

Reviewer 3:

This contribution is well written up, with some weaker points in the theoretical discussion. The experiments are very well described and produce qualitatively similar force/angle dependences at several peel-off speeds.

Here are a few comments.

In the Assumptions section, I would use "surface tension" instead of "surface energy". Furthermore, I'd like to see a 2-sentence description of the stick-slip regime you'd like to avoid.

The Theory section severely lacks clear pictures with where the forces are acting, leaving the reader guessing (and almost unable to check the formulae). When determining Young's modulus, you could write in which experimental setup you will use (point the reader to the appropriate figure). Later, it is not clear how you determined the size of the layers and tested your guess for the optimal crack size.

The energetical considerations formulae lack descriptions, and leave the reader guessing what E_D is... the stretching? Why are the dimensions of it [N^2 m]? Isn't gamma energy per surface area (and not surface energy period)? Basically, all that comes out of this is the F = ... / sin alpha dependence of the critical force, with a fit of what's on top of eqn. [6]. This then goes around the sketchy derivation and allows the authors go get a reasonable result.

The next section "Experimental" should be called "E. setup/results". Why did you do your experiments over 5 days? Didn't this "tire" the the glue? What are the dimensions of gamma?

Figure 7 is just a plot of a function, which is quite unnecessary. More interesting are Figures 8-10. I wonder why they don't go to 90 degrees.

Furthermore, what is the "theoretical prediction", is it with the same gamma? Or is gamma adjusted? How come you then "predict" it? Aren't you just fitting const/sin(alpha) through the data?

Small typos:

devided ... divided
oblivious ... obvious
differently well ... differently
broadness ... width
be seen in figure 7 ... be seen in figure 6
wether ... whether
of adhesive being ... of the adhesive being
shaved curve ... shaped curve
the Young's modulus ... Young's modulus
belonging plot ... corresponding plot
crucial parameters surface ... crucial parameters: the surface

Editorial request

Use the template when revising the article:
http://iypt.org/File:IYPT_papers_Template.doc

Figure 1: consider adding a scale bar.

References: Please type the references in a way that the readers may immediately understand where and how they may look for a document. Add volumes and journal titles. Note that providing the address and affiliations of authors is not necessary and is not a common practice.

What part of the manuscript relies on or cites the second reference?