Request for an NSF supplement for the AY 2006-07 for Graduate Student Support

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I would like to request a supplement to support a graduate student, Lara Pudwell (see CV attached), to work on the part of the current proposal dealing with restricted permutations and enumeration schemes. Lara, who is currently a third-year graduate student, is perfectly suited for pursuing this research and has already done significant work. See, for example, her completely computer-generated web book "Systematic Studies in Pattern Avoidance"

`http://www.math.rutgers.edu/ lpudwell/webbook/bookmain.html` .

Besides the pioneering work by H. Wilf, A. Burstein and T. Mansour, all dedicated to special cases, not much is known. In particular, all the work done so far was done in the traditional, computer-free, mode.

Moreover, some of this work is laden with minor but irritating errors, and Lara already systematically corrected all of them. To cite just one example, Lara corrected formula (6) of Alex Burstein and Toufik Mansour's paper "Words restricted by patterns with at most 2 distinct letters" (Elec. J. Comb. 9(2), #R3 (2002)) from the erroneous

$$F_{112}(x,y) = \frac{1}{1-y} \cdot \left(\frac{1-y}{1-y-xy} \right)^{1/y}$$

to the corrected

$$F_{112}(x,y) = \frac{y}{(1-y)^2} \cdot \left((1-y-xy) \left(\frac{1-y}{1-y-xy} \right)^{(1+y)/y} + y - 1 \right)$$

I believe that using the method of rigorous experimental mathematics will further this field significantly. In addition, having the release-time from teaching that this supplement will grant will be very instrumental for the sponsored project, and will also be conducive to Lara's professional growth.

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