From the Journal of Marcus Dreamseed Anderson

2010 Sept 4 0500
Breakfast: #7-3 (+jam_strawberry); PT: 3.4km & Cardio#4; Wearing: Shortsleeve#2 & Tie#6

Note: When

$$\frac{\lambda}{4} = n_r + \frac{1+|m|}{2} \qquad \text{where } n_r = 0, 1, 2, \ldots$$

$$\frac{e}{c}\left[\left(\vec{v}\cdot\vec{\nabla}\right)A_i - \vec{v}\cdot\frac{\partial\vec{A}}{\partial x_i}\right] = \frac{e}{c}\left[v_j\frac{\partial}{\partial x_j}A_i - v_j\frac{\partial A_j}{\partial x_i}\right] = \frac{e}{c}v_j\left[\frac{\partial A_i}{\partial x_j} - \frac{\partial A_j}{\partial x_i}\right]$$

if you insert

$$\rho = \sqrt{\frac{2\left(3\times10^{10}\,\frac{\text{cm}}{\text{sec}}\right)\left(1.05\times10^{-27}\text{ erg sec}\right)}{\left(4.8\times10^{-10}\text{ esu}\right)\left(2\times10^{4}\text{ g}\right)}m} \approx 2.5\times10^{-6}\sqrt{m}\text{ cm}$$

with

$$\begin{aligned}\left(\vec{r}\times\vec{B}\right)^2 &= r_iB_j\varepsilon_{ijk}r_mB_n\varepsilon_{mnk} = (r_iB_jr_iB_j - r_iB_jr_jB_i)\\ &= r^2B^2 - \left(\vec{r}\cdot\vec{B}\right)^2 - 0\end{aligned}$$

and set

$$\begin{aligned}\left(\vec{r}\times\vec{B}\right)^2 &= r_iB_j\varepsilon_{ijk}r_mB_n\varepsilon_{mnk} = (r_iB_jr_iB_j - r_iB_jr_jB_i)\\ &= r^2B^2 - \left(\vec{r}\cdot\vec{B}\right)^2 - 0\end{aligned}$$

this leads to

$$\Rightarrow \qquad E - \frac{\hbar^2k^2}{2m_e} = \frac{eB\hbar}{m_ec}\left(n_r + \frac{1+|m|+m}{2}\right).$$

Conclusion: Figeys et al Analytic Biophysics, 2010, 72 (9), pp 330-335 is wrong.

Note: Take bag#4 as travel proceeds from apartment to lab to airport.

Note: Shut down experiments 3304 through 3317 and make sure the reactor has sufficient coolant.

Marcus stood from the table and put the journal in the recycling bin before placing his plate in the sink. With practiced, efficient motions he cleaned the kitchenette, storing the unused eggs, sausage, squash and juice that comprised his Saturday breakfast #3.

A diverse diet is necessary for optimal health and diversity is important for mental acuity, which is why I included strawberry jam with the meal, Marcus rationalized to himself. It certainly wasn't because he had a sweet tooth.

Collecting his briefcase and pre-packed bag (number four, for long-term absences), Marcus paused at the mirror to insure his tie (number six, the one with Maxwell's equations on it) was correct. The clip-on had had to be custom-made, but Marcus was quite unwilling to put a noose around his neck. Another glance informed him that his shirt was lint-free, his pants crisply pressed and his shoes were polished, presenting the image of a young businessman on the way to an office cubicle – not the image of a young graduate student on his way to a week in Bermuda.

What a waste of time. Instead of traveling for eleven hours I could be processing another eighty-one test cases, not to mention initiating the eighth-stage crystalline growth in the new biochip. I swear to the God, Goddess or Supreme Being of your choice that the next time Doctor Anderson listens to the psychologists' babble about job related stress or social burnout I'll bring up integrated circadian rhythmicity.

Marcus walked to the laboratory, waving to a few of the other early-risers on the campus. Normally he would have used his bicycle, but today he'd be taking a cab to the airport. The door was locked when he tried to open it, and was that a bump and hurried whisper? Marcus paused before unlocking the lab and entering. Richard Sanchez, one of the undergraduate students, was sitting at his desk grinning nervously at him.

"What'cha doin' here, Marcus? You should be over the Atlantic by now." While Marcus admired Rick's data analysis skills, his work ethic made him barely worth the hassle. He was, however, reliable when it came to sitting shifts and monitoring the laboratory. This explained his presence at such an early hour, but not his disheveled appearance or nervousness.

"I optimized my travel by taking a later flight and removing the three-hour layover in Atlanta. Here is my itinerary. Why was the door locked?"

"I wanted some privacy. And this gives you half an hour to change planes in Atlanta International Airport – that's impossible!"

Marcus frowned. "It is possible. I have mapped the pedestrian density and traffic flow and by my calculations it will take 22 minutes. As I have no checked bags, even three standard deviations will not make me late." Marcus tilted his head as he continued. "And you *know* I do not plan my life around four standard deviation events especially when it comes to human behavior – the statistics of en-masse behavior are well known to–"

"Yes, yes." Rick waved his hand in dismissal, then grinned. "You've quoted Eaves & Young before – got it. It's all good. Speaking of all good, Doctor Ahmidouch hired a tech to monitor the reactor while you're gone. Could you go make sure he knows what he's doing?"

"Sure." Marcus opened the door to the control room and froze.

The electric pencil sharpener made a horrendous grinding as Marcus destroyed his fountain pen.

Startled, he looked down at the ink-spattered remains in his hand and briefly wondered how he had gotten there. A soft laugh caught his attention and he looked up, once again losing himself in the smiling vision of beauty before him. His cheeks began to flame and, desperate to try and salvage something – anything – from the situation, Marcus tried to introduce himself.

He threw his hand out and loudly stammered, “M-marcus! I am! Marcus, I mean. Greetings and salutations!”

The young woman stared at the outthrust hand, clenching a dripping mass of broken plastic, and completely dissolved in giggles. Marcus could feel his face flush as Rick’s braying laughter erupted from the doorway behind him.

“I’m so sorry, Marcus was it? I’m Amber – Rick’s girlfriend.” She fluidly rose and stepped towards the immobile young man. “He said you were easy to embarrass, but don’t worry – it’s cute.” Patting him on the shoulder as she passed by, Marcus heard the soft sounds of cloth pressing up against cloth followed by a wet sound.

“Sorry, buddy – I guess I forgot to mention I hooked up with Amber.” Rick’s voice held no sincerity, and a poorly-smothered giggle punctuated the words. “I’ll see you in a few weeks. C’mon, babe – I guess we can’t um, work here, so let’s go back to my place.” Another series of giggles, this time higher-pitched, and receding footsteps left Marcus alone in the cool room.

No, thought Marcus, You hadn’t told me you’d gone and gotten another girlfriend – especially not one that beautiful.

As he turned towards the cleaning supply cabinet, Marcus mused and perhaps I’ll forget to mention that Anderson Incorporated is looking to hire JavaC programmers.

Sighing, Marcus’ shoulders slumped. No, he thought, I shouldn’t be that petty. Regardless of his interpersonal habits, Rick is a competent programmer and deserves the opportunity. I’ll just fail to mention that I’ve been offered managerial oversight of the Anderson research division.

Marcus smiled for a moment as he enjoyed the thought of lording over his fellow lab rats, then turned to his beloved laboratory and began to prepare it for his absence.

Alright – the particle balance equations for neutral species coolant reactions are given by

$$\frac{dn_{O_2}}{dt} = \frac{Source}{Volume} + K_{17} n_O \cdot n_{O_2^+} + K_{21} n_{O_2^+} + \frac{1}{2}\left(K_{22} n_O + K_{29} n_{O(^1D)}\right) + K_{23} n_O \cdot n_O + K_{28} n_{O_2(a^1\Delta_g)} - \left(K_7 n_e n_{O_2} + K_9 n_e n_{O_2} + \sum_{c=11}^{14} K_c n_e n_{O_2} + (K_{31} + K_{32}) n_e n_{O_2} + K_{35} n_O + n_{O_2} + k_p n_{O_2}\right) \quad (1)$$

$$\frac{dn_{O_2(a^1\Delta_g)}}{dt} = K_7 n_e n_{O_2} + K_{39} n_{O_2^+} n_{O(^1D)} - \left(\sum_{c=24}^{26} K_c n_e + K_{28}\right) n_{O_2(a^1\Delta_g)} - k_p n_{O_2(a^1\Delta_g)} \quad (2)$$

$$\frac{dn_{O(^1D)}}{dt} = (K_{12} + 2K_{13}) n_e n_{O_2} + \left(K_{25} n_{O_2(a^1\Delta_g)} + K_{27} n_{O_2^+}\right) n_e - (K_{29} + K_{33} n_e + K_{37} n_{O_2} + K_{38} n_O + + K_{39} n_{O_2^+} + k_p) n_{O(^1D)} \quad (3)$$