

CounterClockWise

Chapter 9 -- General Relativity

It is early May and true to form in LA (Lower Alabama), the showers of April and the runoff from the river delta have kept the waters of Mobile Bay a muddy brown.

Kevin and Diana are taking the morning off. Dressed in beach attire, they are soaking in the sunshine as they mosey along the Eastern shore. Lathered up with sunscreen as they are, tans will not be had this day. But the early beach-season sun feels good on their bare skins, and Diana is definitely easy on the eyes in her skin-toned bikini.

Kevin is watching her gesture broadly as she is saying, "Most of this land was owned by another prominent family at one time. Those old pilings that you see out there are all that's left of Zundel's wharf."

She is pointing to a few dozen wooden pilings poking their heads above the lapping waves. There is a hodge-podge of small fishing boats amid the pilings, and they range from old wooden Stauters with small outboard motors to sleek fiber-glass craft with trolling motors on the front and stern drives on the back.

Shielding his eyes with his hand to avoid the glare from the sun, Kevin says, "I see the local anglers think it's a good place to fish."

"It is," explains Diana, "speckled trout and redfish tend to gather around any underwater structure."

"In the first part of the 1900's, You couldn't drive from the other side of Mobile Bay to this side. So there were ferries that crossed the bay regularly."

"One of the regular ferry runs landed here at Zundel's wharf."

"That's how the folks in Mobile who could afford houses on the Eastern Shore got over here for the summer."

Glancing again at the covey of boats, Kevin asks her, "Do you like to fish?"

Musing, she replies, "I haven't fished in a long time. I don't have the patience for it."

"I don't either," he agrees. "But Chaucer tells me the owner of Counterclockwise has a refurbished charter boat from our era. And they have a regular deep-sea

fishing trip once a month during the warmer months. Anybody on the staff is welcome.

Let's go the next time they schedule it. It could be fun, and we don't have to fish the whole time."

"OK," she says. "If you want to go, I'll be happy to go with you."

Glancing at the position of the sun in the sky, Kevin gestures back the way they came and says, "Wanna head back? It'll be the lunching hour by the time we get back to the Ponderosa, and I have worked up an appetite."

Making their way back to the car, they both brush the sand from their bodies as best they can. Then Diana slips on a pair of jeans and a lacy top over her bathing suit. Kevin's trunks are as long as shorts anyway so he just adds a T-shirt and slips his bare feet into loafers.

Decent enough for the Punta Clara Diner, they have lunch before heading back to Chaucer's office where Kevin is once again presenting another facet of relativity.

Chaucer isn't there when they arrive, so they each find a comfortable spot on the sofa and Jeeves provides them with virtual hookups to their lab computers. They work until Chaucer arrives – a good 30 minutes late.

"Sorry," he says as he comes through the door. I was collaborating again on the gravity modulator they are developing in G-section."

"Hakuna Matata," Kevin assures him. "We got a lot done. But if you are ready now we can begin."

A nod from Chaucer and Jeeves begins:

"It wasn't just our ideas about space and time that were altered by Einstein's Theory of Relativity... Einstein also realized that we would have to reconsider the whole ideas of energy and gravity.

...

"And Einstein viewed gravity as a distortion of space-time itself.

...

"In Einstein's picture - a massive object like the Sun bends space itself, so starlight moving through that curved space SHOULD be bent by gravity.

...

“Perhaps the ultimate bizarre result of curved space-time is a black hole. It is closely related to the wormholes that Chaucer talked about the first day we were here.

...

“In our era scientists were trying to combine the Standard Model with gravity in a single all encompassing model... a Theory of Everything—a TOE -- or a Grand Unified Theory - a GUT.

“SuperString theory was the emerging contender. But it came with an interesting twist. It said that our universe didn’t just have 3 dimensions of space and one of time... four dimensions in all, rather it had 10.

“And M-theory or brane theory followed closely on its heels raising the number of dimensions to 11 in all.

Jeeves pauses as Diana asks,
“What exactly is a dimension?”

And Kevin answers, “I plan to cover that next time...but that’s all I have prepared for now. I’ll pick it up there next week.”

The following Saturday is a magnificent day for a fishing trip. Kevin and Diana are up at 0-Dark-Thirty AM. And by 0-5:30, they are on their way to the landing at Zeke’s Marina on Cotton Bayou. They are driving together in Diana’s **Joy** instead of riding the shuttle with Chaucer and the rest of the crowd.

By 6:00 o’clock they have arrived at Zeke’s and get their first sight of the yacht just as the morning sun is rising. She is magnificent. **Serenity** is an old Hatteras 60GT Tournament Edition with three staterooms, two heads and an engine upgrade to 1,800 hp. She sports a custom hull color and a wraparound windshield. Inside, teak is everywhere.

Kevin and Diana head for the gang plank and board along with about twenty others – most of whom they know by name.

It is a two-hour run to the blue water where they hope to catch ling, amberjack, and red snapper.

Chatting with Chaucer along the way, Kevin expresses surprise that Chaucer is on the trip. Chaucer tells him,

“I like to go even though I don’t do any fishing. I have always loved beautiful boats, and this one is really special”

After a morning of fishing the blue water, the boat carries them back to the barrier islands off the Mississippi coast. It drops the anglers at various secluded spots to do a little shore fishing. Kevin and Diana find themselves alone on the east end of Cat Island. The isolation is wonderful.

Kevin asks Diana,
“Do you know a lot about the sea life around here?”

“Well,” she responds, “I had a course or two in marine biology as part of my studies but nothing directed specifically at the Gulf Waters.”

He says, “Tell me something esoteric like how lungs developed from gills.”

She thinks for a minute and says,
“The blue crab that we see around here is *Callinectes sapidus*. And I like to eat them boiled and pickled, fried on spider sandwiches, or cooked in gumbo. If you like crabs, let me fix my Grandmothers crab gumbo for you sometime, it is a southern treat without equal.”

She grins as Kevin licks his lips in anticipation and continues...

“But back to the crabby story... when the female crab is ready to mate she releases a pheromone into the water and this attracts the males. But she can only be fertilized after she has shed her shell so once a male finds a female close-to-ready he will clasp the female with one pair of his legs and haul her around until she is ready to mate.”

Smiling, Kevin asks, “How can you tell male crabs from females?”

But she doesn’t take the bait as she answers, “Females have red claw tips... the males do not, but I doubt that’s how they tell.”

Still trying to get a rise out of her, Kevin asks,
“Are the females crabbier than the males?”

That did it. Giving him a mock glare, she responds,
“Only when teased to the limit. Did you know that fish have rings like tree stumps and you can tell the age of a fish by counting these rings just like you do for trees?”

Kevin raises one eyebrow at her and says, “Now who’s teasing who?”

But she insists, “No, I am serious!”

Not sure he believes her, he says, "OK, tell me something else?"

"Well, she says. "did you know that hammerhead sharks have an electric sense in addition to their other senses?"

And he asks, "What do you do with an electric sense?"

Grinning at him, she says "You can sense electric fields of course. Hammerheads' heads are shaped the way they are so they can glide along the sandy bottom and using sensors in the extended head shape, they detect the electric fields of prey buried under the sand."

Kevin is enjoying himself and he asks her, "OK forget the fish stories and tell me something about other animals."

"Sure, she says, "have you ever wondered how insects, like moths get 'trapped' by a light at night?"

He answers, "I just thought they were attracted to it and when they got close, the heat of the light killed them."

"Nope." She informs him, "It's a navigation error. Many insects navigate by the brightest light in the sky...the sun by day and the moon by night.

"Little kids, riding in cars at night, frequently wonder why the moon is moving along with them. It isn't of course. It is just so far away that it's relative location isn't affected by our tiny motion here on earth.

"Over millions of years, insects have learned to fly in a straight line by keeping the sun or moon at a constant angle in their vision.

"But when the brightest light turns out to be a porch light or a street lamp, imagine what happens when the insect keeps THAT light at a constant angle."

She looks at him closely to see if he gets it...and he does ...and he says, "Well, I'll be a monkey's uncle – they would follow the path of a logarithmic spiral – until they spiraled in to the light source."

Impressed she says, "Yes, my math wizard, but just so you know that I am totally beyond the road to perdition... Such a path is almost never a Fibonacci spiral or a golden spiral unless the angle of approach just happens to be about 17 degrees."

Now HE is impressed, and he resorts to impromptu poetry, "Ahhh..."

“A young lady of some erudition
Broke ranks with her family tradition
She always asked why
People claimed to find phi
Til she sailed past the road to perdition.”

And she laughingly refers to an earlier poetry bobble that she still teases him about when she says...
“ ‘the skin of her teeth??!’ “

“I surrender,” he says”

A few hours later, they are back on dry land and posing for a group photo. Everyone who caught a fish is holding it up for the camera. And while Kevin didn't even fish, Diana did and she caught a spec that was just barely long enough to keep. And just as the picture is snapped, Diana holds her fish out directly toward the camera to try and make it look larger than it is.

Watching her out of the corner of his eye, Kevin thoroughly enjoys her smile and her new-found joie de vivre.

End Chapter 9