4. A Consequent Dynamic Bank Stress Test

Usually, an official – classical - bank stress test simulates a quasi-static deterioration of certain financial market parameters for a defined duration.
We will show here that this procedure does not consider dangerous resonance effects, phenomenological failure or even global disaster due to defect accumulation caused by otherwise completely subcritical, but repetitive loading situations and "communication" of external loads with internal (intrinsic) displacement fields (intrinsic stresses, dislocations, inhomogeneities etc.).

A Stress Strain Model for Financial Institutions

For many reasons especially however the simple fact that a stable financial system and / or institution has to provide stability for a sufficiently amount of time, it appears perfectly plausible to consider such systems or institutions as something static or at least quasi-static. Thus, applying models originally being developed for solid states and solid bodies, even though strange on first sight, become immediately understandable within the context of static and quasi-static concepts or, in other words, stability and reliability.
We give a dimension to every degree of freedom within the financial system to be considered, defined by a coordinate x. The multitude of dimensions in the multi-dimensional financial space is then defined by a vector $\mathbf{x}=(x_1, x_2, x_3, \ldots, x_i, \ldots, x_n)$ with n components for the n dimensions (properties) in the financial vector space.
Within a linearized stress-strain theory for this special space we define the displacement vector $\mathbf{u}$ simply giving the displacement of a point described by the vector $\mathbf{x_i}$ which is being moved to another point described by the vector $\mathbf{x_j}$ via:

$$\mathbf{u} = \mathbf{x_j} - \mathbf{x_i} \,. \tag{32}$$

From this we can define the linear strain as follows:

$$\boldsymbol{\varepsilon} = \varepsilon_{ij} = \frac{1}{2}\left(\frac{\partial u_i}{\partial x_j} + \frac{\partial u_j}{\partial x_i}\right) = \frac{1}{2}\left(\frac{\partial\left[\mathbf{x_j} - \mathbf{x_i}\right]_i}{\partial x_j} + \frac{\partial\left[\mathbf{x_j} - \mathbf{x_i}\right]_j}{\partial x_i}\right), \tag{33}$$

where the expression $\left[\mathbf{x_j} - \mathbf{x_i}\right]_i$ has to be interpreted as the i-th component of the difference or displacement vector $\left[\mathbf{x_j} - \mathbf{x_i}\right]$. As in linear theory of elasticity this, of course, is a tensor of second order. One immediately can see that we have already symmetrized the strain tensor in the form (33). This is motivated by the fact, that here we do not want to consider cases where the whole system might rotate. In such a case the strain tensor would read:

$$\boldsymbol{\varepsilon} = \varepsilon_{ij} = \frac{\partial u_i}{\partial x_j} = \frac{\partial\left[\mathbf{x_j} - \mathbf{x_i}\right]_i}{\partial x_j} \,. \tag{34}$$

Obviously, the simplest approach for the development of a financial stress-strain theory would be based on a Hookian law like

$$\begin{aligned} \boldsymbol{\sigma} = \sigma_{ij} = E_{ijkl}\varepsilon_{ij} \\ \boldsymbol{\varepsilon} = \varepsilon_{ij} = C_{ijkl}\sigma_{ij} \end{aligned} \,. \tag{35}$$

Which keeps the whole theory physically linear. Here σ_{ij} is giving the components of the stress tensor $\boldsymbol{\sigma}$, while E_{ijkl} and C_{ijkl} are defining the components of the 4-th order Young's module and the compliance tensor, respectively. Their components are assumed to be constants within a physical linear model.

However, as for many interactions within a financial system the potentials between constituents are not linear, but rather of a general form like

$$V\left(\mathbf{x}_j-\mathbf{x}_i\right)=f\left(\mathbf{x}_j-\mathbf{x}_i\right). \tag{36}$$

With an arbitrary function f, we most certainly do not exclude "pressure", "shear", "temperature" etc. dependencies of the Young's modulus and the compliance tensors, considering the components variables rather than constants. This generalization is motivated by observations of physical nonlinearities near the stability limits of material systems [36]. Now, as it is the goal of this short note to provide a tool for bank stress tests, meaning to test the stability and reliability of a financial system or institution, we cannot start with a restricted interaction possibly excluding exactly those limits we are explicitly interested in.
Thus, we introduce a generalization of equation (35) with Young's modulus and compliance operators rather than constants. Equation (35) will now read:

$$\begin{aligned}\boldsymbol{\sigma}=\sigma_{ij}&=\hat{E}_{ijkl}\varepsilon_{ij}\\ \boldsymbol{\varepsilon}=\varepsilon_{ij}&=\hat{C}_{ijkl}\sigma_{ij}\end{aligned}. \tag{37}$$

The operators have now simply to be adjusted to the real "stress" a certain strain will cause for the bank or financial institution. This, of course, is a rather individual task as it depends on the concrete boundary conditions of the institution being investigated and will therefore not be considered here in this general study. Our goal is to show how the stress-strain approach can be used to detect dangerous stress effects an ordinary bank stress test would not realize or manifest.
With the tools at hand, we can already understand some of the aspects in connection with the Lehman Brothers disaster in 2008. In order to give a brief history overview we simply cite from investorpia.com (c.f. investopedia.com/articles/economics/09/lehman-brothers-collapse.asp):

"On September 15, 2008, Lehman Brothers filed for bankruptcy. With \$639 billion in assets and \$619 billion in debt, Lehman's bankruptcy filing was the largest in history, as its assets far surpassed those of previous bankrupt giants such as WorldCom and Enron. Lehman was the fourth-largest U.S. investment bank at the time of its collapse, with 25,000 employees worldwide. Lehman's demise also made it the largest victim, of the U.S. subprime mortgage-induced financial crisis that swept through global financial markets in 2008. Lehman's collapse was a seminal event that greatly intensified the 2008 crisis and contributed to the erosion of close to \$10 trillion in market capitalization from global equity markets in October 2008, the biggest monthly decline on record at the time."

As in the following, we will quite often need the combined words "debts" and "assets", we will abbreviate this as "debtassets" (speek: deb-tassets).
We will try to describe the effect of the Lehman Brother bankruptcy on the financial market as an impact situation. Caused by the subprime crisis the financial market was already pre-stressed which could simply be modeled by a 3-dimensional distribution of deviation between debts and assets in the market institutions. Even as buying subprime-based equities was an internal decision of the institutions in the first place, the load leading to more and more defaults in connection with the subprime mortgages was coming mainly from outside. Simply by the fact that more and more "house-owners" were unable to pay their loans because of a minor economic slowdown and increasing FED interest rates, which led to a general increase of interest rates, of course forces came into play driving debts and assets apart. Here we model these external forces as distributed contact loads stressing the system. In a three

dimensional financial parameter space we can easily illustrate the stresses in a most classical manner.

In the example here we explicitly have chosen a mixed loading condition meaning one with loading normal and lateral to the institution's or financial system's boundaries. Surely one could discuss here the various meanings of loading directions, surfaces interfaces etc., but here we are only interested in the effect on stresses. As usually the loading caused by a bigger crisis will be of distributed character, meaning it will not act locally as a point load or with a singularity. An interesting result is then to be obtained for the deviatoric (shearing) part of the stress tensor. If we sum up all shear stresses following the von Mises rule, we result in the total shear field expression given as (with n denoting the dimension of our parameter space):

$$\sigma_{vM} = \sqrt{\frac{1}{2}\left(\sigma_{ij} - \frac{\sigma_{kk}}{n}\right)\left(\sigma_{ij} - \frac{\sigma_{kk}}{n}\right)}. \tag{38}$$

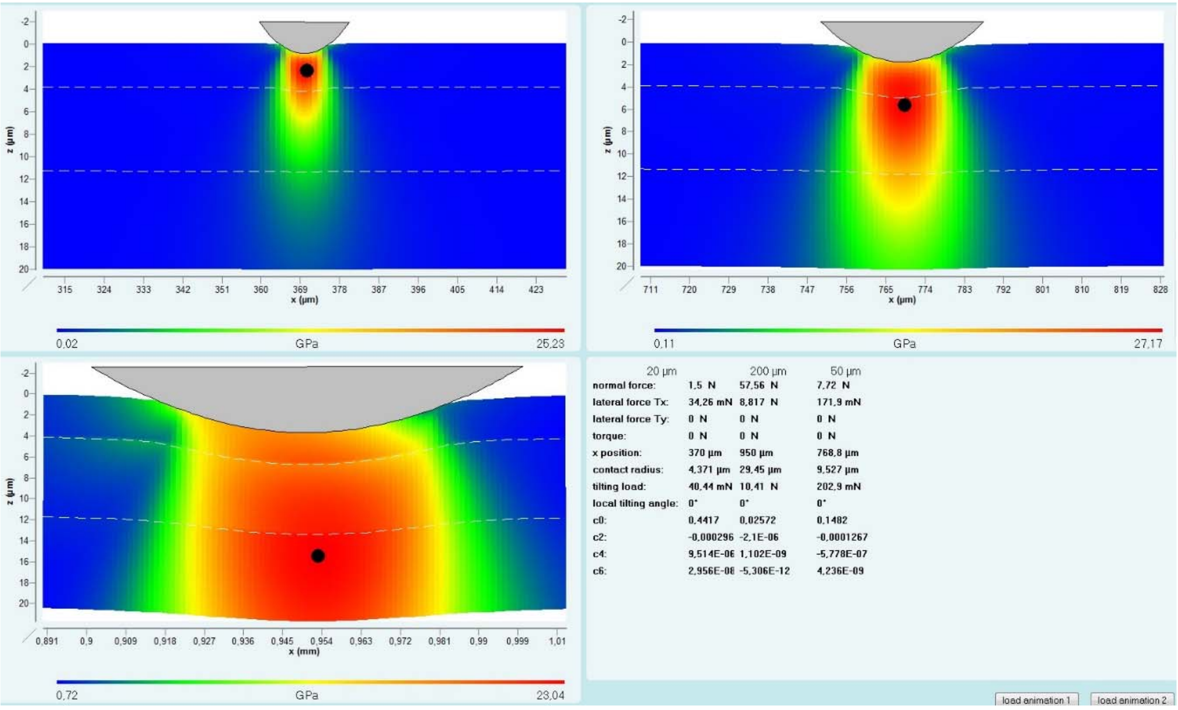

Fig. 40: Illustration of a von Mises stress distribution on a layered space with differently sized "indenters" leading to total shear stress maxima at various depths. The bigger the contact, the impacting body or the on-pressing counterpart (other financial player) the deeper the maximum of the total shear is to be found. The evaluations were performed with the analytical Software FilmDoctor® [47].

As it can be seen in the figure above however, this leads to shear stress maxima within the system (not at the surface). Dependent on the size of the contact area or load distribution, the shear maximum will therefor always be underneath the surface of our financial system, an aspect which might contribute to the fact that rarely faulty equities become obvious to the outside world as long as the stresses they produce are not exceeding stability limits leading to irreversible strains (plasticity).
The moment the von Mises stress or total shear as given above exceeds the critical yield strength of our system, we result in plastic flow which leads to permanent form change or – in order to use economical expressions – to irreversible dynamics of assets, debts or agents within the financial system.

This is, usually, nothing out of the ordinary. Even if being conducted or triggered in a bigger scale such a transition should not affect the whole global system. In accordance with the load being applied certain parts of the system would flow plastically, this way increasing the contact area until an equilibrium is being reached where the system comes to a rest. So what made the subprime crisis and the Lehman Brother bankruptcy so special?
Well, the author thinks that two things where coming together:
A) the fact that huge parts of the market where already stressed relatively close to their yield strength values and
B) the speed with which the first local transitions (plastic flow) were taking place.
A fast release of elastic energy within a plastic flow process adiabatically transforms significant amounts of that very energy into thermal energy. This is, because plastic flow is a shearing process which, together with internal friction, produces heat where the shearing takes place. Heat however, increases the temperature and an increasing temperature decreases the yield strength. In our multidimensional financial space we could consider temperature as chaotic movement of agents (players) and debtassets, or, in another word, panic. Thus, the moment the first plastic flow onset took place so rapidly at a relatively high initial yield strength Y_0 the temperature increased, bringing the yield strength down, leading to more rapid plastic flow and so on. In the end, we have a huge and unstoppable meltdown where only a severe extraction of dynamic energy (cooling) could contain flood.
If only the US government would have slowed down the first plastic flow by a tiny bit, the later global melt down might never have happened in the severity we have observed.
Important Side-Note: From the principle comparability of a stressed financial system with real physical stresses we can directly conclude that there are also structural optima against certain damages or catastrophic events. There are also – of course – structural sub-optima or even weaknesses any financial system should try to avoid when organizing itself or being organized. This, of course, is no news, but as shown here, the current procedures of testing banks or financial institutions for such weak structures are ruefully incomplete and inholistic. Also do the current procedures not automatically suggest improvements, while the approach proposed here does so.
The author sees one little snag in this consideration regarding the subprime crisis. The effect described should have led to a permanent form change, meaning a perhaps disastrous and significant shift of debtassets, but not necessarily to complete disappearance of equities or market erosion as it was observed. Thus, the model obviously is incomplete and we will therefore try to improve it. But before we are going to do so we will see whether we might find some more explanations why there was such an obvious detachment of certain parts of the market from reality.

How transaction and information speed limits lead to a special theory of relativity for the financial market – A possible reason for the decoupling of certain market players

It is clear that within a financial system there are always elements which are attracted in certain directions (usually gravitational centers or attractors). It appears convenient to introduce gravitational fields in order to describe such attractors and incorporate masses or massive particles by a generalized Higgs field mechanism.
One such source of mass can be the stress-strain field itself. Let us assume that the bank’s or financial institution’s state is completely described by its stress-strain tensors. The density of free energy E_f of the system can now be evaluated via:

$$E_f = \frac{\boldsymbol{\sigma}\bullet\boldsymbol{\varepsilon}}{2} = \frac{\sigma_{ij}\varepsilon_{ij}}{2} = \frac{\sigma_{ij}\hat{E}_{ijkl}\varepsilon_{kl}}{2} = \frac{\varepsilon_{kl}\hat{C}_{ijkl}\sigma_{ij}}{2}. \quad (39)$$

It might also be of need to consider other free energies from sources not being directly connected with the stress or strain of the system, but we will leave this for later.
In order to obtain the total free energy of the system, integration is required with respect to the coordinates of our multidimensional parameter space within the boundaries of the system. Simply motivated by the fact that neither information in the financial system nor financial debtassets can travel by a speed exceeding a certain critical velocity c, we immediately result in a theory of relativity for the whole financial sector and thus in a generalized law of mass being proportional to energy [37]:

$$E_{finance} = m_{finance} \cdot c_{finance}^2 \quad \equiv \quad E = m \cdot c^2$$
$$E_f = \frac{\boldsymbol{\sigma} \bullet \boldsymbol{\varepsilon}}{2} = \frac{\sigma_{ij}\varepsilon_{ij}}{2} = \frac{\sigma_{ij}\hat{E}_{ijkl}\varepsilon_{kl}}{2} = \frac{\varepsilon_{kl}\hat{C}_{ijkl}\sigma_{ij}}{2} = m_f \cdot c^2 . \tag{40}$$

This way, we obtain a financial mass directly resulting from the stress-strain energy of a financial institution. As ordinary mass does, this financial mass also provides inertia and hinders the system in its dynamic, meaning, whatever is being intended to do with this mass respectively stressed debtassets it will cost some energy to accelerate it. In other words, without effort or force F no stressed debtassets can be moved at all, because in order to move them it requires acceleration and de-acceleration. “To move” hereby is to be understood as to place. There are however, as we well know, many other sorts of financial debtassets (not necessarily being stressed) which also require effort (force) if one wants to transfer them within the multidimensional space of an usual financial system or institution. This immediately shows us that these financial debtassets also must have rest mass not necessarily being connected with the effect of stress or strain. A properly chosen Higgs field can provide us with the right connection of this mass-production and those effects being responsible for it. We can immediately conclude that the whole apparatus of special theory of relativity is now applicable to the financial sector with many consequences regarding information and debtassets transfer in this field. This holds true as long as mass density and acceleration can be considered small. One of these interesting results, namely, that the limit of speed of information exchange in the financial sector immediately leads to a connection between financial free energy and mass of the form given in equation (40), was already discussed above. Another one can be obtained from the dilatation of time and length contraction. So, it appears that it is not just a psychological effect that for fast moving agents (decision makers) time seems to flow slower and space seems to shrink. With velocities close to the actual limit (speed of light transactions with computer-based decisions), the world of finance quite literally becomes a village and seconds stretch to hours. But, this only holds for the fast moving agents while the rest of the market still acts in the “real” multidimensional space-time. This way, the speeded up or speedy part of the financial marked decouples itself from the classical sector with its ordinary speeds. In a world with a principle speed limit being the same for all market participants, this effect is meaningless, because it does not change the situation that there is a limit for the flow of information which holds for all players. However, there is the small snag of a typically much smaller speed limit for the classical players and the real market, meaning the speedy players do not necessarily outsmart the classical players but simply outrun them. Thus, the author is of the opinion that the physical decoupling is triggering a psychological and financial detachment. This, namely the existence of several speed limits c_i with players being selectively bound by them, then leads to parallel worlds (space-times or simply detached markets with semipermeable boundaries), which partially has disastrous consequences for the classical market and its real players or agents. In order to support bringing the speedy market players back to earth one only would need to increase the mass for the debtassets to be transacted. A general tax on financial transactions honed with a parameter dependency regarding the transaction speed would do this regulatory job rather perfectly.

Financial Market Resonances

Considering financial distortions, like discrepancies of assets and debts, of any kind of institution (bank, company, single person or groups of people) as strains and keeping the concept of energy conservation also in the field of finance and market, it becomes clear that there is also the effect of stresses. And quite literally these stresses, even though often in much higher dimensions than observed in technical mechanics, are acting as stresses usually do in mechanics, namely by leading to destruction when exceeding certain limits. Interestingly, there even is enough reason for distinguishing between shear and normal stresses, temperature dependent elastic modulus, yield strength or fracture toughness.
Here however, we are only considering an effect which cannot be detected by a classical quasi-static bank stress test. For this, we assume certain assets or debts not only contributing to the total amount of stresses but also adding inertia to the system as a whole. No matter how quick money can be transferred around the world electronically, it is nevertheless evident, that the real assets or debts behind the money respectively for which the money actually stands, can only ever be transferred with a certain velocity and that this velocity is actually limited (like the speed of light is the limiting velocity in physics). This must mean however, that these assets or debts must have inertia and thus, mass. Using a properly adjusted Higgs mechanism, we are able to theoretically control this mass or mass production within our financial system (or financial universe).
An illustrative way to incorporate the masses via a Higgs mechanism is one where we couple the Higgs field to the hydrostatic stress respectively the trace of the stress tensor. With this tensor being symmetric, the trace also is the first invariant of the stresses. It is shown in the next section that, interestingly, such an approach gives us the original Higgs field in three dimensions. Does this mean, that also the Higgs field in the universe is coupled to the hydrostatic stress of space? Indeed, there are interesting similarities, but for this we have to refer to another section (c.f. section “8. Interesting Coincidences”). It also explains the self-interaction of the Higgs field as a parameter induced effect with the elastic space respectively time being non-Hookean, which in more figurative words might be formulated as more rubber-like.
It does not matter how strict we deal with fine structure constants and coupling parameters, the moment we have introduced masses in our system we will also have resonances. This means, in contrast to any purely quasi-static financial stress test the concept of mass immediately can lead to oscillatory interactions of external loads (perhaps coming from the stock market) with these masses. As in material science, these financial ensembles of inertia (or masses), of course, will have their own resonance frequencies and thus, if been exited with the right frequency, as in mechanics, these ensembles can be destroyed by completely subcritical but rightly tuned external loads.
It is interesting to consider the 2007- subprime-caused global economic crisis or the more recent Chinese stock market crisis under this aspect. When looking closely at the history of these disasters one observes a rather pronounced up and down behavior with varying frequencies starting long before the actual melt down but cumulating in huge amplitudes right before it. Of course, especially with the subprime crisis the “resonances” were helped by many wrong measures from the US government, decoupling effects within the financial system [46] and thus, bypassing intrinsic control and buffering mechanisms, irresponsible private house owners and the greed of banks and investors (see also: forbes.com/sites/stevedenning/2011/11/22/5086/).

Black hole market effects and global melt down situations

Even more interesting however, are fields and boundary conditions with significant acceleration. With the simple assumptions of a maximum velocity to exchange information and heavy masses being equivalent to inertia, we directly result in a General theory of relativity for the financial sector [38]. Following Hilbert's approach [39] we can even derive the gravitational field equations for our multidimensional financial space. We start with the following variational problem:

$$\delta_g W = 0 = \delta_g \int_V d^n x \left(\sqrt{-g} \left[R - 2\kappa L_M \right] \right), \tag{41}$$

with g denoting the determinant of the metric tensor, W and V giving the action and the volume of the n-dimensional space, respectively, R denoting the Ricci-scalar, and the last term $2\kappa L_M$ describing the Lagrange density of "matter" (financial debtassets). As in the physical theory we avoid higher orders of curvature respectively higher orders for the Ricci-scalar and or the metric within our Lagrangian approach. Evaluation gives the well-known Einstein field equations in n dimensions with the indices α and β running from 1 to n:

$$R^{\alpha\beta} - \frac{1}{2} R g^{\alpha\beta} + \Lambda g^{\alpha\beta} = -\kappa T^{\alpha\beta}. \tag{42}$$

Here we have with $R^{\alpha\beta}$, $T^{\alpha\beta}$ the Ricci- and the energy momentum tensor, respectively, while the parameters Λ and κ are constants (usually called cosmological and coupling constant, respectively).

We immediately see that without the presence of matter, energy or forces ($T^{\alpha\beta} = 0$) we result in the so-called vacuum field equations:

$$R^{\alpha\beta} - \frac{1}{2} R g^{\alpha\beta} + \Lambda g^{\alpha\beta} = 0. \tag{43}$$

Interesting solutions for our purposes are those of the Friedmann-Robertson-Walker kind considering the financial universe as a whole and the Schwarzschild solution [40] if only parts of it are considered. Friedmann-Robertson-Walker solutions can be evaluated from (42) under the assumption of homogeneous matter distribution (R=const) and isotropy and form n-spheres, n-hyper-spheres and simple n-planes. We are here only interested in the n-sphere solution because of its finite geometry (the financial cosmos is not infinite). The equations given above provide the means to the understanding of a collapse scenario as seen during the subprime crisis.

Before we discuss this however, we need to point out that exporting the Einstein Hilbert action (41) into the world of finance might force us to incorporate fractal space time [41 - 43], multidimensional time [44] and also taking the surface integral into account which usually is been ignored during the variation of (41). This generalization might be necessary in order to make our theoretical approach more complete and adjustable to the real world of finance and market in general.

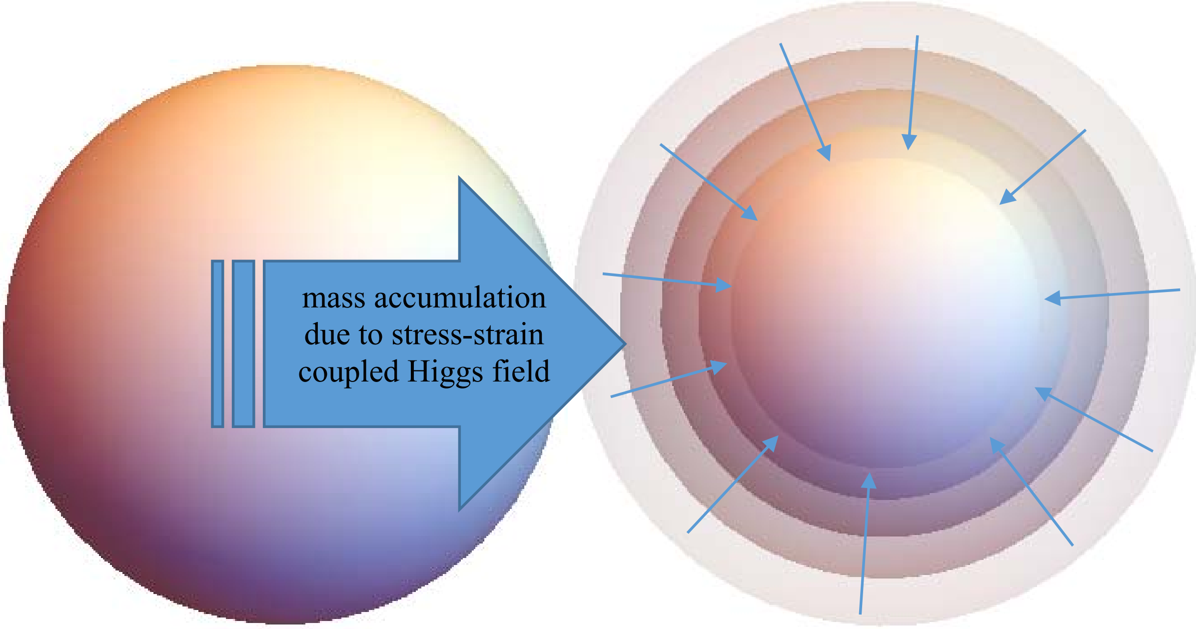

Fig. 41: Illustration of a global melt down as gravitational collapse.

Going back to a stressed financial system as described above and considering the moment of beginning yielding, caused by von Mises shear stresses locally exceeding the yield strength due to external loads, we now couple the following Higgs field to the strain of space:

$$W = \sum_{i=0}^{n-1} (-1)^i \cdot \Phi_i \cdot \lambda^{i \cdot 2} . \tag{44}$$

The material part of the Lagrangian L_M as given in (41) should then be written as:

$$L_M = \frac{1}{2}\left(g^{\alpha\beta}\lambda_{,\alpha}\lambda_{,\beta} + \sum_{i=0}^{n-1} (-1)^i \cdot \Phi_i \cdot \lambda^{i \cdot 2} \right). \tag{45}$$

The knowledgeable reader might already have realized that this field form is motivated by the theory of nonlinear elasticity [45]. So, in three dimensions the term

$$W = \sum_{i=0}^{2} (-1)^i \cdot \Phi_i \cdot \lambda^{i \cdot 2} \equiv -\Phi \cdot \lambda^2 + 2 \cdot \Psi \cdot \lambda^4 + P = \sigma_H = \frac{1}{3}\left(\sigma_{11} + \sigma_{22} + \sigma_{33}\right) \tag{46}$$

would just give the hydrostatic stress σ_H for a uniform extension and it is interesting to note that this exactly is the structure of the original Higgs field (c.f. equation (2)), apart from a constant term P. We will not go deeper into this funny "coincidence" here but refer to a special section further below (c.f. "8. Interesting Coincidences").
The important aspect about our choice of Higgs field here resides in the fact that there is significant mass production at positions of high strains reinforcing these strains further due to self-coupling interaction effects.

Now we come back to the example of the recent subprime crisis and consider the global economic melt-down following it. When asking the simple question how a subprime crisis can affect the economy of the whole world to such an extent as observed in the years after 2007, especially after the Lehmann Brother disaster, we usually get the answer that "everything is connected". But, is it really that simple? Shouldn't we immediately fire back

the question of what type such a connection can be, if acting on such a huge and general scale? For instance, why should a mortgage crisis endanger the whole automotive sector? Taking the example of the last question this means, usually there might be no straight connection between the mortgage market and automotive sector, but the whole seems more like a general gravitational field acting on all agents (depending on their masses or inertia). Now it becomes clear how we can apply our concept of a Higgs field mechanism coupling into the market stresses and strains.
The whole would be comparable to the collapse of a dead star. The moment the collapse starts somewhere in the financial sector, the gravitational field caused by the accumulated masses (bad masses caused by bad economic decisions and insufficient political control – quality control, if one wants to put it that way) will immediately attract all masses in its vicinity. With these masses falling into the center, more mass will be attracted and so on. In a three dimensional space this scenario would just look like a collapsing massive body like a dead star, for instance (see figure 41). Successively ever greater areas of the global economy are affected, even though no connection to the US mortgage market had been visible on first sight.

A Few Words about Future Events

In stars near the end of their life it is the internal pressure caused by the Pauli principle (either due to electronic or neutronic ensembles of rather extreme character – degenerated matter) preventing those starts from falling in itself together and becoming white or neutron stars or even black holes. Another way how dying stars can prevent the "complete melt-down" to a black hole is by getting rid of inactive[1] or dead mass. Stars do this gradually during their life and/or right at the end within a gigantic explosion (novae or supernovae). As well know, this effort is not in all cases successful.
In the finance sector the authors sees little evidence that rules (be it governmental or internal ones, meaning those rules within the financial institutions) are applied leading to fermionic Pauli-barriers when parts of an institution become "inactive" or "dead" or simply "bad".
In the current global situation the author also sees almost no options for the external organization or the environment containing these financial institutions (states or associations of such, usually) in extracting dead mass from sick or dying financial institutions which have become crucial or are getting in danger of becoming so. This simply is because many countries, states or state-unions are already so overloaded with dead mass that they cannot take on any more[2]. By the way, the same holds true for the so called policy of cheap money because it only contributes to an economic sickness known as "Dutch Disease". This might not fit in the picture about the world of some debts hungry economist like Paul Krugman, but it is rather simple physics.

[1] "Inactive" here means that the mass cannot provide energy for further nuclear fusion processes and therefor it cannot contribute to an internal pressure counter balancing the gravitational force. We might therefor also call this mass "dead mass".
[2] Of course, the critical Chandrasekar-masses for states have still to be found, but it seem to be evident – at least to this author – that amounts on public debts exceeding the BIP are pretty much the limit a healthy organism can bear before crumbling or break down completely. And this – according to the physical concept of life – simply is because the state as an organism starts to waste too much energy in keeping (not decreasing, because this is already out of the question) only one of its order parameters - the finances namely - balanced somehow (anyhow). Thus, the state is more and more maintaining the order respectively holding the entropy in only one of its many aspects (duties), which is the financial one. Everything else is more and more neglected and with the public debts too high, the previously healthy organism is already out of options the moment one of its in principle lesser important organs (a mid-sized bank like Lehmann Brothers for instance) is getting sick. Then no dead mass can be taken on by the outer region around the lesser important organ and the melt down is unavoidable once again.

Thus, the next catastrophic event is as sure as there will be no third election of Barack Obama as President of the United States of America.